





## Charbel Farhat

Vivian Church Hoff Professor of Aircraft Structures, Professor of Mechanical Engineering and Director of the Army High Performance Computing Research Center  
Aeronautics and Astronautics

 Curriculum Vitae available Online

 Resume available Online

### CONTACT INFORMATION

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### Bio

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#### BIO

Charbel Farhat is the Vivian Church Hoff Professor of Aircraft Structures at Stanford University, where he is also Chairman of the Department of Aeronautics and Astronautics, Professor of Mechanical Engineering, Professor in the Institute of Computational and Mathematical Engineering, and Director of the King Abdulaziz City for Science and Technology Center of Excellence for Aeronautics and Astronautics. He currently serves on the the Space Technology Industry-Government-University Roundtable. From 2007 to 2018, he served as the Director of the Army High Performance Computing Research Center at Stanford University, and from 2015 to 2019, on the United States Air Force Scientific Advisory Board (SAB). He has also previously served on the technical assessment boards of several national research councils and foundations, and on the United States Bureau of Industry and Security's Emerging Technology and Research Advisory Committee (ETRAC) at the United States Department of Commerce. He was designated by the US Navy recruiters as a Primary Key-Influencer and flew with the Blue Angels during Fleet Week 2014.

He is a Member of the National Academy of Engineering, a Member of the Royal Academy of Engineering (UK), a Member of the Lebanese Academy of Sciences, a Docteur Honoris Causa of Ecole Normale Supérieure Paris-Saclay, a Docteur Honoris Causa of Ecole Centrale de Nantes, a designated ISI Highly Cited Author in Engineering, and a Fellow of six professional societies: the Society of Industrial and Applied Mathematics (SIAM), the American Society of Mechanical Engineers (ASME), the International Association of Computational Mechanics (IACM), the World Innovation Foundation (WIF), the United States Association of Computational Mechanics (USACM), and the American Institute of Aeronautics and Astronautics (AIAA). He was knighted by the Prime Minister of France in the Order of Academic Palms and awarded the Medal of Chevalier dans l'Ordre des Palmes Académiques. He is the recipient of several other professional and academic distinctions including the Lifetime Achievement Award from the ASME's Computers & Information in Engineering Division, the Spirit of St Louis Medal from the ASME's Aerospace Division, the AIAA Ashley Award for Aeroelasticity and the Structures, Structural Dynamics and Materials Award from the AIAA, the John von Neumann Medal and the Computational and Applied Sciences Award from the USACM, the Grand Prize from the Japan Society for Computational Engineering and Science (JSCES), the Gauss-Newton Medal, the IACM Award and the Computational Mechanics Award from the IACM, the Gordon Bell Prize and the Sidney Fernbach Award from the Institute of Electrical and Electronics Engineers (IEEE) Computer Society, and the Modeling and Simulation Award from the Department of Defense.

He is also Editor-in-Chief of the International Journal for Numerical Methods in Engineering, Editor of the International Journal for Numerical Methods in Fluids, and a member of the editorial boards of nine other international scientific journals. He has been an AGARD lecturer on aeroelasticity and computational mechanics

at several distinguished European institutions, and a plenary or keynote speaker at numerous national and international scientific meetings. He is the author of over 400 refereed journal publications on fluid-structure interaction, computational fluid dynamics on moving grids, computational structural mechanics, computational acoustics, supercomputing, parallel processing, and model order reduction as well as other approaches for physics-based machine learning.

## **ACADEMIC APPOINTMENTS**

- Professor, Aeronautics and Astronautics
- Professor, Mechanical Engineering
- Member, Institute for Computational and Mathematical Engineering (ICME)

## **ADMINISTRATIVE APPOINTMENTS**

- Chair, Department of Aeronautics and Astronautics, (2008- present)

## **HONORS AND AWARDS**

- The Commander's Public Service Award, Department of the Air Force (2019)
- The Edison Lecture, University of Notre Dame (2019)
- Appointed to the Space Technology Industry-Government-University Roundtable, National Academies (2017)
- Docteur Honoris Causa, Ecole Normale Supérieure Paris-Saclay, France (2017)
- Docteur Honoris Causa, Ecole Centrale de Nantes, France (2017)
- Elected to the Lebanese Academy of Sciences, Lebanese Academy of Sciences (2017)
- Spirit of St Louis Medal, American Society of Mechanical Engineers (2017)
- The AIAA Ashley Award for Aeroelasticity, American Institute of Aeronautics and Astronautics (2017)
- The Grand Prize, The Japan Society for Computational Engineering and Science (2017)
- Elected to the Royal Academy of Engineering (International Fellow), Royal Academy of Engineering (2016)
- The Ted Belytschko Lecture, Northwestern University (2016)
- Appointed to the United States Air Force Scientific Advisory Board (SAB), US Air Force (2015)
- The Liviu Librescu Memorial Lecture, Virginia Tech (2015)
- The MIT Den Hartog Lecture in Mechanics, Massachusetts Institute of Technology (2015)
- Designated Primary Key-Influencer and Flew with the Blue Angels, US Navy (2014)
- The Gauss-Newton Medal, International Association of Computational Mechanics (2014)
- Elected to the National Academy of Engineering, National Academy of Engineering (2013)
- The IACM Award, International Association of Computational Mechanics (2012)
- Fellow, Society of Industrial and Applied Mathematics (2011)
- Knighted by the Prime Minister of France in the Order of Academic Palms, Prime Minister of France (2011)
- Lifetime Achievement Award, American Society of Mechanical Engineers (2011)
- Structures, Structural Dynamics and Materials Award, American Institute of Aeronautics and Astronautics (2010)
- Highly Cited Researcher in Engineering, Institute for Scientific Information (ISI) Highly Cited (2009)
- John von Neumann Medal, US Association of Computational Mechanics (2009)
- Fellow, American Society of Mechanical Engineers (2003)
- The Subaru Educator Spotlight, Subaru (2003)
- Fellow, International Association of Computational Mechanics (2002)
- The Computational Mechanics Award, International Association of Computational Mechanics (2002)

- The Gordon Bell Award, Institute of Electrical and Electronics Engineers (2002)
- 2001 Modeling and Simulation Award, Department of Defense (2001)
- Engineer of the Year (AIAA Rocky Mountain Section), American Institute of Aeronautics and Astronautics (2001)
- Fellow, US Association of Computational Mechanics (2001)
- Fellow, World Innovation Foundation (2001)
- The Computational and Applied Sciences Medal, US Association of Computational Mechanics (2001)
- Fellow, American Institute of Aeronautics and Astronautics (1999)
- Young Investigator Award, International Association of Computational Mechanics (1998)
- The R. H. Gallagher Special Achievement Award for Young Investigators, US Association of Computational Mechanics (1997)
- The Sidney Fernbach Award, Institute of Electrical and Electronics Engineers (1997)
- The College of Engineering and Applied Sciences Research Award, University of Colorado (1996)
- The Sup'Prize Achievement Award, IBM (1995)
- Aerospace Structures and Materials Best Paper Award, American Society of Mechanical Engineers (1994)
- Arch T. Colwell Merit Award, Society of Automotive Engineering (1993)
- FNRS Fellowship, Belgian National Science Foundation (1993)
- Research Featured in Yearbook of Science and the Future, Encyclopaedia Britannica (1992)
- CRAY Research Gigaflop Performance Award, CRAY Research (1990)
- TRW Fellowship, TRW Foundation (1989-1992)
- CRAY Research Award, CRAY Research (1989)
- Presidential Young Investigator Award, National Science Foundation (1989)
- AGARD Lecturer, NATO Research & Technology Organisation (1988, 1991, 1993, 1995)
- PACER Fellowship, Control Data Corporation (1987-1989)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Member, The Space Technology Industry-Government-University Roundtable, The National Academies (2017 - present)
- Chair, Pendray Award Committee, The American Institute of Aeronautics and Astronautics (2015 - present)
- Member, The United States Air Force Scientific Advisory Board (SAB), United States Air Force (2015 - present)
- Editor-in-Chief, The International Journal for Numerical Methods in Engineering, Wiley (2014 - present)
- Chair, Naval Research Laboratory, Structural Materials Triennial Review Board, The Naval Research Laboratory (2014 - 2014)
- Member, The National Academy of Engineering, The National Academy of Engineering (2013 - present)
- Member, Airbus Fly Your Ideas Panel of Judges, Airbus (2013 - 2013)
- Member, The American Institute of Aeronautics and Astronautics Publications Committee, The American Institute of Aeronautics and Astronautics (2012 - present)
- Editor, The International Journal for Numerical Methods in Fluids, Wiley (2010 - present)
- Member, Board of Advisors, Association Teratec (2010 - present)
- Fellow, The Society of Industrial and Applied Mathematics (2009 - present)
- Member, Executive Council, The International Association for Computational Mechanics, The International Association for Computational Mechanics (2009 - 2018)
- Member, Selection Committee 2009 Theodore von Karman Prize, The Society of Industrial and Applied Mathematics (2009 - 2009)
- Member, The US Bureau of Industry and Security's Emerging Technology and Research Advisory Committee, The United States Department of Commerce (2008 - present)
- Member, High Scientific Council, Office National d' Etudes et de Recherches Aerospatiales (ONERA) (2006 - 2012)

- Member, The Sandia Science Advisory Board, The Sandia National Laboratories (2006 - 2009)
- Member, Subcommittee on Computational Science, President's Information Technology Advisory Committee (PITAC), US Government (2004 - 2004)
- Fellow, The American Society of Mechanical Engineers (2003 - present)
- Vice-Chair, The Society for Industrial and Applied Mathematics' Activity Group on Supercomputing, The Society for Industrial and Applied Mathematics (2003 - 2006)
- Fellow, The International Association of Computational Mechanics (2002 - present)
- Chair, The Engineering Sciences Research Foundation's External Review Panel, The Sandia National Laboratories (2002 - 2009)
- Fellow, The World Innovation Foundation (2001 - present)
- Fellow, The US Association of Computational Mechanics (2001 - present)
- Member, General Council, The International Association for Computational Mechanics, The International Association for Computational Mechanics (2000 - present)
- Fellow, The American Institute of Aeronautics and Astronautics (1999 - present)
- Member-at-Large, The United States Association for Computational Mechanics, The United States Association for Computational Mechanics (1995 - 2006)

## PROFESSIONAL EDUCATION

- Diplome d'Ingenieur, Ecole Centrale des Arts et Manufactures, France (1983)
- MS, Universite de Paris VI, France, Applied Mechanics (1983)
- MS, The University of California, Berkeley, Structural Engineering and Structural Mechanics (1984)
- MS, The University of California, Berkeley, Electrical Engineering and Computer Sciences (1986)
- PhD, The University of California, Berkeley, Civil Engineering (1987)

## LINKS

- Research and Teaching Site: <https://web.stanford.edu/group/frg>
- Flying with the Blue Angels: <https://www.flickr.com/photos/stanfordeng/sets/72157648134366930/>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Charbel Farhat and his Research Group (FRG) develop mathematical models, advanced computational algorithms, and high-performance software for the design and analysis of complex systems in aerospace, marine, mechanical, and naval engineering. They contribute major advances to Simulation-Based Engineering Science. Current engineering foci in research are on the nonlinear aeroelasticity and flight dynamics of Micro Aerial Vehicles (MAVs) with flexible flapping wings and N+3 aircraft with High Aspect Ratio (HAR) wings, layout optimization and additive manufacturing of wing structures, supersonic inflatable aerodynamic decelerators for Mars landing, and the reliable automated carrier landing via model predictive control. Current theoretical and computational emphases in research are on high-performance, multi-scale modeling for the high-fidelity analysis of multi-physics problems, high-order embedded boundary methods, uncertainty quantification, probabilistic machine learning, and efficient projection-based model order reduction as well as other forms of physics-based machine learning for time-critical applications such as design, active control, and digital twins.

## Teaching

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### COURSES

#### 2020-21

- Model Reduction: CME 345 (Spr)
- Numerical Methods for Compressible Flows: AA 214 (Win)

#### 2019-20

- Aerodynamics of Race Cars: AA 109Q (Spr)
- Numerical Methods for Compressible Flows: AA 214 (Win)

#### 2018-19

- Mechanical Vibrations: AA 242B, ME 242B (Spr)
- Numerical Methods for Compressible Flows: AA 214B (Win)

#### 2017-18

- Aerodynamics of Race Cars: AA 109Q (Spr)
- Numerical Methods for Compressible Flows: AA 214B (Win)

### STANFORD ADVISEES

Albo Voci

#### Doctoral Dissertation Reader (AC)

Jessie Lauzon, Joseph Lorenzetti

#### Doctoral Dissertation Advisor (AC)

Spenser Anderson, Faisal As'ad, Joshua Barnett, Jonathan Ho, Clayton Little, Andrew McClellan

#### Master's Program Advisor

Faisal As'ad, Reid Bassette, Robert Dyro, Jared Naphy, Joshua Ott, Noah Youkilis, Jean de Becdelievre

#### Doctoral Dissertation Co-Advisor (AC)

Joseph Ferguson

### Publications

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#### PUBLICATIONS

- **A computationally tractable framework for nonlinear dynamic multiscale modeling of membrane woven fabrics** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Avery, P., Huang, D. Z., He, W., Ehlers, J., Derkevorkian, A., Farhat, C.  
2021
- **Mesh sampling and weighting for the hyperreduction of nonlinear Petrov-Galerkin reduced-order models with local reduced-order bases** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Grimberg, S., Farhat, C., Tezaur, R., Bou-Mosleh, C.  
2021
- **Gradient-based constrained optimization using a database of linear reduced-order models** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Choi, Y., Boncoraglio, G., Anderson, S., Amsallem, D., Farhat, C.  
2020; 423
- **On the stability of projection-based model order reduction for convection-dominated laminar and turbulent flows** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Grimberg, S., Farhat, C., Youkilis, N.  
2020; 419
- **Learning constitutive relations from indirect observations using deep neural networks** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Huang, D. Z., Xu, K., Farhat, C., Darve, E.  
2020; 416
- **In situ adaptive reduction of nonlinear multiscale structural dynamics models** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
He, W., Avery, P., Farhat, C.

2020

- **Model Reduction Framework with a New Take on Active Subspaces for Optimization Problems with Linearized Fluid-Structure Interaction Constraints** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Boncoraglio, G., Farhat, C., Bou-Mosleh, C.  
2020
- **Discrete embedded boundary method with smooth dependence on the evolution of a fluid-structure interface** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Ho, J., Farhat, C.  
2020
- **An embedded boundary approach for resolving the contribution of cable subsystems to fully coupled fluid-structure interaction** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Huang, D. Z., Avery, P., Farhat, C.  
2020
- **Feasible Probabilistic Learning Method for Model-Form Uncertainty Quantification in Vibration Analysis**  
Farhat, C., Tezaur, R., Chapman, T., Avery, P., Soize, C.  
AMER INST AERONAUTICS ASTRONAUTICS.2019: 4978–91
- **Mesh adaptation framework for embedded boundary methods for computational fluid dynamics and fluid-structure interaction** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Borker, R., Huang, D., Grimberg, S., Farhat, C., Avery, P., Rabinovitch, J.  
2019; 90 (8): 389–424
- **Fast computation of the wall distance in unsteady Eulerian fluid-structure computations** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Grimberg, S., Farhat, C.  
2019; 89 (4-5): 143–61
- **A multilevel FETI-DP method and its performance for problems with billions of degrees of freedom** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Toivanen, J., Avery, P., Farhat, C.  
2018; 116 (10-11): 661–82
- **A family of position- and orientation-independent embedded boundary methods for viscous flow and fluid-structure interaction problems** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Huang, D. Z., De Santis, D., Farhat, C.  
2018; 365: 74–104
- **Parameterization Framework for the MDAO of Wing Structural Layouts**  
Dubois, A., Farhat, C., Abukhwejah, A. H., Shageer, H.  
AMER INST AERONAUTICS ASTRONAUTICS.2018: 1627–38
- **Modeling and Quantification of Model-Form Uncertainties in Eigenvalue Computations Using a Stochastic Reduced Model** *AIAA JOURNAL*  
Farhat, C., Bos, A., Avery, P., Soize, C.  
2018; 56 (3): 1198–1210
- **A discontinuous Galerkin method with Lagrange multipliers for spatially-dependent advection-diffusion problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Borker, R., Farhat, C., Tezaur, R.  
2017; 327: 93–117
- **A multilevel projection-based model order reduction framework for nonlinear dynamic multiscale problems in structural and solid mechanics** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Zahr, M. J., Avery, P., Farhat, C.  
2017; 112 (8): 855–81
- **Nonlinear Model Order Reduction Based on Local Reduced-Order Bases**  
Amsallem, D., Zahr, M., Farhat, C.

- **Design of a Data-Driven Environment for Multiphysics and Multi-Domain Applications** *Dynamic Data Driven Applications Systems*  
Michopoulos, J., Tsompanopoulou, P., Houstis, E., Farhat, C., Lesoinne, M., Rice, J.  
edited by Darema, F.  
Kluwer Academic Publishers, Netherlands, (in press).
- **A high-order discontinuous Galerkin method for unsteady advection-diffusion problems** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Borker, R., Farhat, C., Tezaur, R.  
2017; 332: 520-537
- **Accelerated mesh sampling for the hyper reduction of nonlinear computational models** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Chapman, T., Avery, P., Collins, P., Farhat, C.  
2017; 109 (12): 1623-1654
- **An enhanced FIVER method for multi-material flow problems with second-order convergence rate** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Main, A., Zeng, X., Avery, P., Farhat, C.  
2017; 329: 141-172
- **TOWARDS MODEL ORDER REDUCTION FOR UNCERTAINTY PROPAGATION IN BLAST-INDUCED TRAUMATIC BRAIN INJURY**  
Iliopoulos, A. P., Michopoulos, J. G., Avery, P., Farhat, C., Teferra, K., Qidwal, S., ASME  
AMER SOC MECHANICAL ENGINEERS.2017
- **Real-time solution of linear computational problems using databases of parametric reduced-order models with arbitrary underlying meshes** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Amsallem, D., Tezaur, R., Farhat, C.  
2016; 326: 373-397
- **Projection-based model reduction for contact problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Balajewicz, M., Amsallem, D., Farhat, C.  
2016; 106 (8): 644-663
- **A Practical Factorization of a Schur Complement for PDE-Constrained Distributed Optimal Control** *JOURNAL OF SCIENTIFIC COMPUTING*  
Choi, Y., Farhat, C., Murray, W., Saunders, M.  
2015; 65 (2): 576-597
- **Progressive construction of a parametric reduced-order model for PDE-constrained optimization** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Zahr, M. J., Farhat, C.  
2015; 102 (5): 1111-1135
- **Structure-preserving, stability, and accuracy properties of the energy-conserving sampling and weighting method for the hyper reduction of nonlinear finite element dynamic models** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Chapman, T., Avery, P.  
2015; 102 (5): 1077-1110
- **Design optimization using hyper-reduced-order models** *STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION*  
Amsallem, D., Zahr, M., Choi, Y., Farhat, C.  
2015; 51 (4): 919-940
- **An embedded boundary framework for compressible turbulent flow and fluid-structure computations on structured and unstructured grids** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Lakshminarayan, V., Farhat, C., Main, A.  
2014; 76 (6): 366-395
- **Reduction of nonlinear embedded boundary models for problems with evolving interfaces** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Balajewicz, M., Farhat, C.  
2014; 274: 489-504
- **A hybrid discontinuous in space and time Galerkin method for wave propagation problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Wang, D., Tezaur, R., Farhat, C.

2014; 99 (4): 263-289

- **Dimensional reduction of nonlinear finite element dynamic models with finite rotations and energy-based mesh sampling and weighting for computational efficiency** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Avery, P., Chapman, T., Cortial, J.  
2014; 98 (9): 625-662
- **An ALE formulation of embedded boundary methods for tracking boundary layers in turbulent fluid-structure interaction problems** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Farhat, C., Lakshminarayan, V. K.  
2014; 263: 53-70
- **A second-order time-accurate implicit finite volume method with exact two-phase Riemann problems for compressible multi-phase fluid and fluid-structure problems** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Main, A., Farhat, C.  
2014; 258: 613-633
- **The discontinuous enrichment method for medium-frequency Helmholtz problems with a spatially variable wavenumber** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Tezaur, R., Kalashnikova, I., Farhat, C.  
2014; 268: 126-140
- **On the Stability of Reduced-Order Linearized Computational Fluid Dynamics Models Based on POD and Galerkin Projection: Descriptor vs Non-Descriptor Forms** *Workshop on Reduced Basis, POD and Reduced Order Methods for Model and Computational Reduction: towards Real-time Computing and Visualization*  
Amsallem, D., Farhat, C.  
SPRINGER INT PUBLISHING AG.2014: 215–233
- **Modeling of Fuel Sloshing and its Physical Effects on Flutter** *AIAA JOURNAL*  
Farhat, C., Chiu, E. K., Amsallem, D., Schotte, J., Ohayon, R.  
2013; 51 (9): 2252-2265
- **A high-order discontinuous Galerkin method with Lagrange multipliers for advection-diffusion problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Brogniez, S., Farhat, C., Hachem, E.  
2013; 264: 49-66
- **Dynamic implosion of underwater cylindrical shells: Experiments and Computations** *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES*  
Farhat, C., Wang, K. G., Main, A., Kyriakides, S., Lee, L., Ravi-Chandar, K., Belytschko, T.  
2013; 50 (19): 2943-2961
- **The GNAT method for nonlinear model reduction: Effective implementation and application to computational fluid dynamics and turbulent flows** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Carlberg, K., Farhat, C., Cortial, J., Amsallem, D.  
2013; 242: 623-647
- **An adaptive scheme for a class of interpolatory model reduction methods for frequency response problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Hetmaniuk, U., Tezaur, R., Farhat, C.  
2013; 93 (10): 1109-1124
- **Multiphysics simulations: Challenges and opportunities** *INTERNATIONAL JOURNAL OF HIGH PERFORMANCE COMPUTING APPLICATIONS*  
Keyes, D. E., McInnes, L. C., Woodward, C., Gropp, W., Myra, E., Pernice, M., Bell, J., Brown, J., Clo, A., Connors, J., Constantinescu, E., Estep, D., Evans, et al  
2013; 27 (1): 4-83
- **RECENT DEVELOPMENTS IN HIGH-PERFORMANCE COMPUTATIONAL VIBRO-ACOUSTICS IN THE MEDIUM FREQUENCY REGIME** *Internoise/ASME 2012 Noise Control and Acoustics Division Conference*  
Farhat, C., Tezaur, R., Hetmaniuk, U.  
AMER SOC MECHANICAL ENGINEERS.2013: 137–145
- **Nonlinear model order reduction based on local reduced-order bases** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Amsallem, D., Zahr, M. J., Farhat, C.



2012; 92 (10): 891-916

- **Computational algorithms for tracking dynamic fluid-structure interfaces in embedded boundary methods** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Wang, K., Gretarsson, J., Main, A., Farhat, C.  
2012; 70 (4): 515-535
- **FIVER: A finite volume method based on exact two-phase Riemann problems and sparse grids for multi-material flows with large density jumps** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Farhat, C., Gerbeau, J., Rallu, A.  
2012; 231 (19): 6360-6379
- **Stabilization of projection-based reduced-order models** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Amsallem, D., Farhat, C.  
2012; 91 (4): 358-377
- **Provably stable and time-accurate extensions of Runge-Kutta schemes for CFD computations on moving grids** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Brogniez, S., Rajasekharan, A., Farhat, C.  
2012; 69 (7): 1249-1270
- **Review and assessment of interpolatory model order reduction methods for frequency response structural dynamics and acoustics problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Hetmaniuk, U., Tezaur, R., Farhat, C.  
2012; 90 (13): 1636-1662
- **A hybrid discontinuous Galerkin method for computing the ground state solution of Bose-Einstein condensates** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Farhat, C., Toivanen, J.  
2012; 231 (14): 4709-4722
- **A systematic approach for constructing higher-order immersed boundary and ghost fluid methods for fluid-structure interaction problems** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Zeng, X., Farhat, C.  
2012; 231 (7): 2892-2923
- **Overview of the discontinuous enrichment method, the ultra-weak variational formulation, and the partition of unity method for acoustic scattering in the medium frequency regime and performance comparisons** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Wang, D., Tezaur, R., Toivanen, J., Farhat, C.  
2012; 89 (4): 403-417
- **A dual-primal FETI method for solving a class of fluid-structure interaction problems in the frequency domain** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Li, J., Farhat, C., Avery, P., Tezaur, R.  
2012; 89 (4): 418-437
- **A Systematic Approach for Constructing Higher-Order Immersed Boundary and Ghost Fluid Methods for Fluid and Fluid-Structure Interaction Problems** *Journal of Computational Physics*  
Zeng, X., Farhat, C.  
2012; 231: 2892-2923
- **Real-Time CFD-Based Fluid-Structure Predictions Using a Database of Parameterized Reduced-Order Models**  
Amsallem, D., Farhat, C., Zahr, M.  
2012
- **Parametric Model Order Reduction Using Stabilized Consistent Interpolation on Matrix Manifolds**  
Amsallem, D., Farhat, C.  
2012
- **On the Stability of Projection-Based Reduced-Order Models: Descriptor vs Non-Descriptor Forms**  
Farhat, C., Amsallem, D.

2012

- **An Embedded Boundary Method for Multi-Material Fluid-Structure Interaction Problems with Large Deformations and Crack Propagation**

Wang, K., Farhat, C., Lea, P., Belytschko, T.

2012

- **FIVER: A Higher-Order Embedded Boundary Method for Multi-Material Compressible Flow and Flow-Structure Problems**

Farhat, C.

2012

- **A Hyper-Reduction Method for Nonlinear Structural Dynamics Reduced-Order Models**

Farhat, C., Cortial, J., Chapman, T.

2012

- **A Second-Order Immersed Boundary Method for Three-Dimensional Compressible Fluid-Structure Interaction Problems**

Zeng, X., Wang, K., Farhat, C.

2012

- **On the Stability of Linearized Reduced-Order Models: Descriptor vs Non-Descriptor Form and Application to Fluid-Structure Interaction**

Amsallem, D., Farhat, C.

2012

- **Nonlinear Model Reduction for CFD Problems Using Local Reduced Order Base**

Washabaugh, K., Amsallem, D., Zahr, M., Farhat, C.

2012

- **Nonlinear Model Order Reduction With Local Reduced-Order Bases for Hyper-Reduction**

Amsallem, D., Zahr, M., Farhat, C.

2012

- **FIVER: A Finite Volume Method Based on Exact Two-Phase Riemann Problems and Sparse Grids for Multi-Material Flows with Large Density Jump**

Farhat, C., Gerbeau, J., -F., Rallu, A.

2012

- **Efficient Structure-Preserving Model Reduction for Nonlinear Mechanical Systems with Application to Structural Dynamics**

Carlberg, K., Cortial, J., Farhat, C.

2012

- **An Embedded Boundary Method for Viscous Fluid/Structure Interaction Problems and Application to Flexible Flapping Wings**

Farhat, C., Larat, A., Main, A., Avery, P., Wang, K., Saint-Jalm, C.

2012

- **A Computational Framework for Multi-Material Fluid-Structure Interaction with Crack Propagation**

Wang, K., Farhat, C., Lea, P., Belytschko, T.

2012

- **Algorithms for interface treatment and load computation in embedded boundary methods for fluid and fluid-structure interaction problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*

Wang, K., Rallu, A., Gerbeau, J., Farhat, C.

2011; 67 (9): 1175-1206

- **A discontinuous enrichment method for variable-coefficient advection-diffusion at high Peclet number** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*

Kalashnikova, I., Tezaur, R., Farhat, C.

2011; 87 (1-5): 309-335

- **A low-cost, goal-oriented 'compact proper orthogonal decomposition' basis for model reduction of static systems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*

Carlberg, K., Farhat, C.

2011; 86 (3): 381-402

- **Efficient non-linear model reduction via a least-squares Petrov-Galerkin projection and compressive tensor approximations** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Carlberg, K., Bou-Mosleh, C., Farhat, C.  
2011; 86 (2): 155-181
- **AN ONLINE METHOD FOR INTERPOLATING LINEAR PARAMETRIC REDUCED-ORDER MODELS** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*  
Amsallem, D., Farhat, C.  
2011; 33 (5): 2169-2198
- **Theoretical Analysis of the Discontinuous Enrichment Method for the Advection-Diffusion Equation at High Peclet Number**  
Brogniez, S., Farhat, C.  
2011
- **Recent Extensions of the Discontinuous Enrichment Method for Variable-Coefficient Advection-Diffusion Problems in the High Peclet Regime**  
Klashnikova, I., Tezaur, R., Farhat, C.  
2011
- **A Computational Study of the Effects of Fuel Slosh on Flutter**  
Chiu, E., Farhat, C., Schotte, J., Ohayon, R.  
2011
- **The GNAT Nonlinear Model Reduction Method and its Application to Fluid Dynamics Problems**  
Carlberg, K., Cortial, J., Amsallem, D., Zahr, M., Farhat, C.  
2011
- **The Discontinuous Enrichment Method and its Domain Decomposition Solver for the Helmholtz Equation**  
Tezaur, R., Farhat, C.  
2011
- **Projection-Based Model Reduction with Stability Guarantee**  
Amsallem, D., Farhat, C.  
2011
- **Parametric Adaptation of Reduced-Order Bases by Interpolation on a Manifold**  
Farhat, C., Amsallem, D.  
2011
- **Numerical Algorithms for Tracking Dynamic Fluid-Structure Interfaces in Embedded/Immersed Boundary Methods**  
Wang, K., G., Gretarsson, J., Main, A., Farhat, C.  
2011
- **Real-Time Parametric Adaptation of Reduced-Order Models by Consistent Interpolation on a Manifold**  
Amsallem, D., Farhat, C.  
2011
- **Efficient Model Reduction of Large-Scale Nonlinear Systems in Fluid Dynamics**  
Carlberg, K., Amsallem, D., Bou-Mosleh, C., Farhat, C.  
2011
- **Comparison of Model Reduction Techniques on High-Fidelity Linear and Nonlinear Electrical, Mechanical, and Biological System**  
Zahr, M., Farhat, C., Carlberg, Kevin, T., Amsallem, D.  
2011
- **A Simple Adaptive Scheme for a Class of Interpolatory Model Reduction Methods for Frequency Response Problem**  
Farhat, C., Hetmaniuk, U., Tezaur, R.  
2011
- **Algorithms for Interface Treatment and Load Computation in Embedded Boundary Methods for Fluid-Structure Interaction Problem**  
Wang, K., Farhat, C.

2011

- **A Systematic Procedure for Achieving Higher-Order Spatial Accuracy in Ghost Fluid and Other Embedded Boundary Methods for Fluid-Structure Interaction Problems**  
Zeng, X., Farhat, C.  
2011
- **A Hybrid Discontinuous Galerkin Method with Plane Waves for Helmholtz Problems and a Domain Decomposition Method**  
Farhat, C., Tezaur, R., Toivanen, J.  
2011
- **A Domain Decomposition Method with a Proper Orthogonal Decomposition Based Augmented Conjugate Gradient Algorithm for Nearby Problems**  
Farhat, C., Carlberg, K.  
2011
- **A Hybrid Kirchhoff Migration Direction-of-Arrival Method for Underwater Imaging of Complex Objects Using Sparse Sensor Arrays** *30th International Acoustical Imaging Symposium*  
Dord, J., Farhat, C.  
SPRINGER.2011: 231–239
- **Game Changing Computational Engineering Technology** *9th International Conference on High Performance Computing for Computational Science*  
Farhat, C.  
SPRINGER.2011: 30–30
- **A discontinuous enrichment method for the efficient solution of plate vibration problems in the medium-frequency regime** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Massimi, P., Tezaur, R., Farhat, C.  
2010; 84 (2): 127-148
- **Robust and provably second-order explicit-explicit and implicit-explicit staggered time-integrators for highly non-linear compressible fluid-structure interaction problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Rallu, A., Wang, K., Belytschko, T.  
2010; 84 (1): 73-107
- **Toward Real-Time Computational-Fluid-Dynamics-Based Aeroelastic Computations Using a Database of Reduced-Order Information** *47th AIAA Aerospace Sciences Meeting and Exhibit including the New Horizons Forum and Aerospace Exposition*  
Amsallem, D., Cortial, J., Farhat, C.  
AMER INST AERONAUT ASTRONAUT.2010: 2029–37
- **Underwater imaging using a hybrid Kirchhoff migration: Direction of arrival method and a sparse surface sensor array** *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*  
Dord, J., Farhat, C.  
2010; 128 (2): 711-718
- **Incorporation of Feedback Control into a High-Fidelity Aeroservoelastic Fighter Aircraft Model** *JOURNAL OF AIRCRAFT*  
Danowsky, B. P., Thompson, P. M., Farhat, C., Lieu, T., Harris, C., Lechniak, J.  
2010; 47 (4): 1274-1282
- **Evaluation of Aeroelastic Uncertainty Analysis Methods** *JOURNAL OF AIRCRAFT*  
Danowsky, B. P., Chrstos, J. R., Klyde, D. H., Farhat, C., Brenner, M.  
2010; 47 (4): 1266-1273
- **A higher-order discontinuous enrichment method for the solution of high Peclet advection-diffusion problems on unstructured meshes** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Kalashnikova, I., Tezaur, R.  
2010; 81 (5): 604-636
- **A Higher-Order DEM for Unstructured Mesh High Peclet Advection-Diffusion Problems** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Kalashnikova, I., Tezaur, R.  
2010; 81: 604-636

- **Nonlinear Model Reduction Using Petrov-Galerkin Projection and Data Reconstruction**  
Carlberg, K., Farhat, C.  
2010
- **Interpolation for Adaptation of Parameterized Reduced-Order Models**  
Farhat, C., Amsallem, D.  
2010
- **A Projection-based Moment-matching Interpolation for Large-scale Frequency Response Problems**  
Farhat, C., Hetmaniuk, U., Tezaur, R.  
2010
- **A Nonlinear Model Reduction Method Based on Petrov-Galerkin Projection and Gappy Data**  
Farhat, C., Carlberg, K.  
2010
- **A Computational Framework Based on an Embedded Method with Exact Local Riemann Solvers for Highly Nonlinear Multi-Phase Fluid-Structure Problems**  
Farhat, C.  
2010
- **Total Energy Conservation in ALE Schemes for Compressible Flows** *European Journal of Computational Mechanics*  
Dervieux, A., Farhat, C., Koobus, B., Vazquez, M.  
2010; 19/4: 337-363
- **Incorporation of Feedback Control into a High-Fidelity Aeroservoelastic Fighter Aircraft Model** *Journal of Aircraft*  
Danowsky, B., Thompson, P., Farhat, C., Lieu, T., Harris, C., Lechniak, J.  
2010; 47: 1274-1282
- **Evaluation of Aeroelastic Uncertainty Analysis Methods** *Journal of Aircraft*  
Danowsky, B., Chrstos, J., Klyde, D., Farhat, C., Brenner, M.  
2010; 47: 1266-1273
- **A method for interpolating on manifolds structural dynamics reduced-order models** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Amsallem, D., Cortial, J., Carlberg, K., Farhat, C.  
2009; 80 (9): 1241-1258
- **An FETI-preconditioned conjugate gradient method for large-scale stochastic finite element problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Ghosh, D., Avery, P., Farhat, C.  
2009; 80 (6-7): 914-931
- **A Pade-based factorization-free algorithm for identifying the eigenvalues missed by a generalized symmetric eigensolver** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Avery, P., Farhat, C., Hetmaniuk, U.  
2009; 79 (2): 239-252
- **A domain decomposition method for discontinuous Galerkin discretizations of Helmholtz problems with plane waves and Lagrange multipliers** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Tezaur, R., Toivanen, J.  
2009; 78 (13): 1513-1531
- **A space-time discontinuous Galerkin method for the solution of the wave equation in the time domain** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Petersen, S., Farhat, C., Tezaur, R.  
2009; 78 (3): 275-295
- **Applications of a variational multiscale method for large eddy simulation of turbulent flows on moving/deforming unstructured grids** *20th Annual Robert J Melosh Conference*  
Rajasekharan, A., Farhat, C.

ELSEVIER SCIENCE BV.2009: 272–79

- **A discontinuous enrichment method for the finite element solution of high Peclet advection-diffusion problems** *20th Annual Robert J Melosh Conference*  
Kalashnikova, I., Farhat, C., Tezaur, R.  
ELSEVIER SCIENCE BV.2009: 238–50
- **A time-parallel implicit method for accelerating the solution of non-linear structural dynamics problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Cortial, J., Farhat, C.  
2009; 77 (4): 451-470
- **The FETI family of domain decomposition methods for inequality-constrained quadratic programming: Application to contact problems with conforming and nonconforming interfaces** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Avery, P., Farhat, C.  
2009; 198 (21-26): 1673-1683
- **Recent Extensions of the Discontinuous Enrichment Method (DEM) to Advection-Dominated Fluid Mechanics Problems**  
Kalashnikova, I., Farhat, C., Tezaur, R.  
2009
- **Squeezing the Most Out of Time-Parallelism for Accelerating the Solution of Time-Reversible ODEs**  
Cortial, J., Farhat, C.  
2009
- **Fast CFD-Based Aeroelastic Predictions Using a Database of Reduced-Order Models**  
Amsallem, D., Cortial, J., Farhat, C.  
2009
- **An Energy Conserving Method for Computing Flow-Induced Forces on Embedded Meshes**  
Farhat, C., Gerbeau, J., -F., Wang, K.  
2009
- **On-Demand CFD-Based Aeroelastic Predictions Using a Database of Reduced-Order Bases and Models**  
Amsallem, D., Lieu, T., Farhat, C.  
2009
- **Multi-scale Modeling and Large-Scale Transient Simulation of Ballistic Fabric Undergoing Impact**  
Powell, D., Zohdi, T., Farhat, C.  
2009
- **A Discontinuous Enrichment Method for the Solution of Plate Vibration Problems in the Medium Frequency Regime**  
Massimi, P., Tezaur, R., Farhat, C.  
2009
- **A Proper Orthogonal Decomposition-Based Augmented Conjugate Gradient Algorithm for Nearby Problems**  
Carlberg, K., Farhat, C.  
2009
- **Interpolation of Reduced-Order Linear Operators on Matrix Manifolds**  
Amsallem, D., Farhat, C.  
2009
- **Monotonically Convergent and Numerically Scalable FETI Methods for Contact Problems**  
Avery, P., Farhat, C.  
2009
- **Effects of Fuel Slosh and its Approximation on Flutter Prediction**  
Chiu, E., Farhat, C.  
2009
- **An On-Line Method for Interpolating Structural Dynamics Reduced-Order Models**

Amsallem, D., Carlberg, K., Cortial, J., Farhat, C.  
2009

● **An Adaptive POD-Krylov Reduced-Order Model for Structural Optimization**

Carlberg, K., Farhat, C.  
2009

● **A Domain Decomposition Method for Helmholtz Problems Discretized using the Discontinuous Enrichment Method**

Farhat, C., Tezaur, R., Toivanen, J.  
2009

● **A Complete Aeroservoelastic Model: Incorporation of Oscillation-Reduction-Control into a High-Order CFD/FEM Fighter Aircraft Mode**

Danowsky, B., Thompson, P., Farhat, C., Lieu, T., Harris, C., Lechniak, J.  
2009

● **F-Function Lobe Balancing for Sonic Boom Minimization** *Computational Fluid Dynamics Journal*

Argrow, B., Maute, K., Farhat, C., Nikbay-Bayraktar, M.  
2009; 17: 221-234

● **A FETI-Preconditioned Conjugate Gradient Method for Large-Scale Stochastic Finite Element Problems** *International Journal for Numerical Methods in Engineering*

Ghosh, D., Avery, P., Farhat, C.  
2009; 80: 914-931

● **CONVERGENCE ANALYSIS OF A DISCONTINUOUS GALERKIN METHOD WITH PLANE WAVES AND LAGRANGE MULTIPLIERS FOR THE SOLUTION OF HELMHOLTZ PROBLEMS** *SIAM JOURNAL ON NUMERICAL ANALYSIS*

Amara, M., Djellouli, R., Farhat, C.  
2009; 47 (2): 1038-1066

● **A discontinuous enrichment method for three-dimensional multiscale harmonic wave propagation problems in multi-fluid and fluid-solid media** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*

Massimi, P., Tezaur, R., Farhat, C.  
2008; 76 (3): 400-425

● **A higher-order generalized ghost fluid method for the poor for the three-dimensional two-phase flow computation of underwater implosions** *JOURNAL OF COMPUTATIONAL PHYSICS*

Farhat, C., Rallu, A., Shankaran, S.  
2008; 227 (16): 7674-7700

● **Interpolation method for adapting reduced-order models and application to aeroelasticity** *AIAA JOURNAL*

Amsallem, D., Farhat, C.  
2008; 46 (7): 1803-1813

● **Strain and stress computations in stochastic finite element methods** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*

Ghosh, D., Farhat, C.  
2008; 74 (8): 1219-1239

● **Stress-based optimization method for reproducing in-flight loads using concentrated forces** *AIAA JOURNAL*

Bou-Mosleh, C., Farhat, C.  
2008; 46 (5): 1273-1277

● **A discontinuous enrichment method for capturing evanescent waves in multiscale fluid and fluid/solid problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*

Tezaur, R., Zhang, L., Farhat, C.  
2008; 197 (19-20): 1680-1698

● **Reduced-Order Modeling, Differential Geometry and Physics-Based Near Real-Time Predictions**

Farhat, C.  
2008

● **Recent Advances in Reduced-Order Modeling and Application to Nonlinear Computational Aeroelasticity**

- 
- Farhat, C., Amsallem, D.  
2008
- **Multi-Scale Construction and Large-Scale Simulation of Dynamically Loaded Structural Fabric**  
Powell, D., Zohdi, T., Farhat, C.  
2008
  - **A Class of High-Order and Multivariate Interpolation Methods for Adapting Reduced-Order Models to Continuous Parameter Changes**  
Amsallem, D., Farhat, C., Cortial, J., Carlberg, K.  
2008
  - **Residualization of an Aircraft Linear Aeroelastic Reduced Order Model to Obtain Static Stability Derivatives**  
Danowsky, B., Thompson, P., M., Farhat, C.  
2008
  - **Multi-Scale Modeling and Large-Scale Transient Simulation of Ballistic Fabric**  
Powell, D., Zohdi, T., Farhat, C.  
2008
  - **Development of a Coupled and Unified Solution Method for Fluid-Structure Interactions**  
Sankaran, V., Sitaraman, J., Flynt, B., Farhat, C.  
2008
  - **Application of Multiple Methods for Aeroelastic Uncertainty Analysis**  
Danowsky, B., Chrstos, J., Klyde, D., Farhat, C., Brenner, M.  
2008
  - **A Computational Framework Based on the Variational LES Method for the Multidisciplinary Analysis of MAVs with Flapping Wings**  
Farhat, C., Rajasekharan, A.  
2008
  - **A Compact Proper Orthogonal Decomposition Basis for Optimization-Oriented Reduced-Order Model**  
Carlberg, K., Farhat, C.  
2008
  - **Scalable FETI Algorithms for Frictionless Contact Problems** *in: Domain Decomposition Methods in Sciences and Engineering XVII, Lecture Notes in Computational Science and Engineering (LNCSE)*  
Dostál, Z., Vondrák, V., Horák, D., Farhat, C., Avery, P.  
edited by Langer et al., U.  
Springer.2008: 263–270
  - **Sonic Boom Mitigation via Shape Optimization using an Adjoint Method and Application to a Supersonic Fighter Aircraft** *Revue Européenne de Mécanique Numérique (European Journal of Computational Mechanics)*  
Maute, K., Farhat, C., Argrow, B., Nikbay, M.  
2008; 17: 217-243
  - **An Interpolation Method for Adapting Reduced-Order Models and Application to Aeroelasticity** *AIAA Journal*  
Amsallem, D., Farhat, C.  
2008; 46: 1803-1813
  - **A Stress-Based Optimization Method for Reproducing In-Flight Loads Using a Reduced Number of Concentrated Forces** *AIAA Journal*  
Bou-Mosleh, C., Farhat, C.  
2008; 46: 1273-1277
  - **Adaptation of aeroelastic reduced-order models and application to an F-16 configuration** *AIAA JOURNAL*  
Lieu, T., Farhat, C.  
2007; 45 (6): 1244-1257
  - **Shape optimization methodology for reducing the sonic boom initial pressure rise** *AIAA 40th Aerospace Sciences Meeting*  
Farhat, C., Maute, K., Argrow, B., Nikbay, M.



---

AMER INST AERONAUT ASTRONAUT.2007: 1007-18

- **Fast frequency sweep computations using a multi-point Pade-based reconstruction method and an efficient iterative solver** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Avery, P., Farhat, C., Reese, G.  
2007; 69 (13): 2848-2875
- **Incorporation of linear multipoint constraints in domain-decomposition-based iterative solvers - Part II: Blending FETI-DP and mortar methods and assembling floating substructures** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Bavestrello, H., Avery, P., Farhat, C.  
2007; 196 (8): 1347-1368
- **High-Order Interpolation of Reduced-Order Models for Near Real-Time Aeroelastic Prediction**  
Amsallem, D., Farhat, C., Lieu, T.  
2007
- **High-Order Interpolation of Reduced-Order Models for Near Real-Time Aeroelastic Prediction**  
Amsallem, D., Farhat, C.  
2007
- **Design and Analysis of Higher-Order Explicit Time-Integrators for CFD Computations on Moving Grids**  
Rajasekharan, A., Farhat, C.  
2007
- **Application of a Dynamic Variational Multiscale Method to the LES of Separated Turbulent Flows**  
Rajasekharan, A., Farhat, C., Bou-Mosleh, C.  
2007
- **Aerodynamic Parameter Adaptation of CFD- Based Reduced- Order Models**  
Lieu, T., Farhat, C.  
2007
- **Aeroelastic Analysis of F-16 and F-18/A Configurations Using Adapted CFD-Based Reduced-Order Models**  
Amsallem, D., Farhat, C., Lieu, T.  
2007
- **A Three-Dimensional Multiscale Discontinuous Method for Evanescent Waves in Fluid/Fluid and Fluid/Solid Problems**  
Massimi, P., Farhat, C., Tezaur, R.  
2007
- **A Domain Decomposition Method for a Class of Discontinuous Galerkin Discretizations of Helmholtz Problems**  
Tezaur, R., Farhat, C., Toivanen, J.  
2007
- **A Higher-Order Generalized Ghost Fluid Method for the Poor for Two-Phase Flow Computation of Underwater Explosion and Implosion**  
Rallu, A., Farhat, C.  
2007
- **A Discussion of Recent Trends and Claims Pertaining to the Staggered Solution of FSI Problems**  
Farhat, C., Lieu, T.  
2007
- **A Domain Decomposition Method for a Class of Discontinuous Galerkin Discretizations of Helmholtz Problems**  
Farhat, C., Tezaur, R., Toivanen, J.  
2007
- **A Discussion of Key Concepts and Methodologies for the CFD-Based Solution of a Class of Nonlinear Fluid/Structure and Thermofluid/Thermostructure Problems**  
Farhat, C., Lieu, T., Kongara, V.  
2007

- **Uncertainty Quantification of Large-Scale Systems Using Domain Decomposition** (*abstract*), *Ninth US National Congress on Computational Mechanics, San Francisco, California*  
Ghosh, D., Avery, P., Farhat, C.  
2007
- **A Shape Optimization Methodology for Reducing the Sonic Boom Initial Pressure Rise** *AIAA Journal*  
Farhat, C., Maute, K., Argrow, B., Nikbay, M.  
2007; 45: 1007-1018
- **Compressed sensing and time-parallel reduced-order modeling for structural health monitoring using a DDDAS** *7th International Conference on Computational Science (ICCS 2007)*  
Cortial, J., Farhat, C., Guibas, L. J., Rajashekhar, M.  
SPRINGER-VERLAG BERLIN.2007: 1171–1179
- **Time-parallel implicit integrators for the near-real-time prediction of linear structural dynamic responses** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Cortial, J., Dastillung, C., Bavestrello, H.  
2006; 67 (5): 697-724
- **The discontinuous enrichment method for elastic wave propagation in the medium-frequency regime** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Zhang, L., Tezaur, R., Farhat, C.  
2006; 66 (13): 2086-2114
- **Three-dimensional discontinuous Galerkin elements with plane waves and Lagrange multipliers for the solution of mid-frequency Helmholtz problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Tezaur, R., Farhat, C.  
2006; 66 (5): 796-815
- **A study of higher-order discontinuous Galerkin and quadratic least-squares stabilized finite element computations for acoustics** *JOURNAL OF COMPUTATIONAL ACOUSTICS*  
Harari, I., Tezaur, R., Farhat, C.  
2006; 14 (1): 1-19
- **Reduced-order fluid/structure modeling of a complete aircraft configuration** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Lieu, T., Farhat, C., Lesoinne, A.  
2006; 195 (41-43): 5730-5742
- **Travel Time-Based Inverse Solution Methods for the Detection of Underwater Intruders**  
Dord, J., F., Farhat, C., Papanicolaou, G.  
2006
- **The Impact of Two-Level FETI-DPH Iterative Solver on the Performance of the Inverse Shifted Lanczos Method**  
Avery, P., Farhat, C.  
2006
- **The Discontinuous Enrichment Method for Multiscale and Higher-Frequency Wave Propagation Problems**  
Farhat, C.  
2006
- **Adapted POD-based Aeroelastic ROMs for Near Real-Time Flutter Analysis of Complete Fighter Configurations**  
Farhat, C., Lieu, T., Harris, C.  
2006
- **Adaptation of POD-Based ROMs to Varying Mach Number and Angle of Attack for the Aeroelastic Analysis of a Complete F-16 Configuration**  
Lieu, T., Farhat, C.  
2006
- **A Stable Time-Parallel and Coarseless Implicit Algorithm for Second-Order Hyperbolic Problems**  
Cortial, J., Bavestrello, H., Dastillung, C., Farhat, C.

2006

● **Towards Data-Driven Modeling and Simulation of Multiphysics Degrading Systems**

Michopoulos, J., G., Farhat, C.

edited by E.

2006

● **On Data-Driven Modeling and Simulation of Aero-Thermo-Mechanically Degrading Nonlinear Continuum Systems**

Michopoulos, J., G., Farhat, C., Bou-Mosleh, C.

2006

● **A dynamic variational multiscale method for large eddy simulations on unstructured meshes** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*

Farhat, C., Rajasekharan, A., Koobus, B.

2006; 195 (13-16): 1667-1691

● **Provably second-order time-accurate loosely-coupled solution algorithms for transient nonlinear computational aeroelasticity** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*

Farhat, C., van der Zee, K. G., Geuzaine, P.

2006; 195 (17-18): 1973-2001

● **Towards a dynamic data driven system for structural and material health monitoring** *6th International Conference on Computational Science (ICCS 2006)*

Farhat, C., Michopoulos, J. G., Chang, F. K., Guibas, L. J., Lew, A. J.

SPRINGER-VERLAG BERLIN.2006: 456-464

● **CFD on moving grids: from theory to realistic flutter, maneuvering, and multidisciplinary optimization** *INTERNATIONAL JOURNAL OF COMPUTATIONAL FLUID DYNAMICS*

Farhat, C.

2005; 19 (8): 595-603

● **FETI-DPH: A dual-primal domain decomposition method for acoustic scattering** *JOURNAL OF COMPUTATIONAL ACOUSTICS*

Farhat, C., Avery, P., Tezaur, R., Li, J.

2005; 13 (3): 499-524

● **Modeling and simulation of multiphysics systems** *JOURNAL OF COMPUTING AND INFORMATION SCIENCE IN ENGINEERING*

Michopoulos, J. G., Farhat, C., Fish, J.

2005; 5 (3): 198-213

● **An iterative domain decomposition method for the solution of a class of indefinite problems in computational structural dynamics** *6th International Symposium on Iterative Methods in Scientific Computing*

Farhat, C., Li, J.

ELSEVIER SCIENCE BV.2005: 150-66

● **On a data-driven environment for multiphysics applications** *FUTURE GENERATION COMPUTER SYSTEMS-THE INTERNATIONAL JOURNAL OF GRID COMPUTING-THEORY METHODS AND APPLICATIONS*

Michopoulos, J., Tsompanopoulou, P., Houstis, E., Farhat, C., Lesoinne, M., Rice, J., Joshi, A.

2005; 21 (6): 953-968

● **A FETI-DP method for the parallel iterative solution of indefinite and complex-valued solid and shell vibration problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*

Farhat, C., Li, J., Avery, P.

2005; 63 (3): 398-427

● **Dynamic data driven methodologies for multiphysics system modeling and simulation** *5th International Conference on Computational Science (ICCS 2005)*

Michopoulos, J., Farhat, C., Houstis, E., Tsompanopoulou, P., Zhang, H., Gullaud, T.

SPRINGER-VERLAG BERLIN.2005: 616-623

● **Three-Dimensional Short Wave Acoustic Scattering Computations Using a Discontinuous Galerkin Method with Plane Waves and Lagrange Multipliers**

Farhat, C., Tezaur, R.

2005

- **Domain-Decomposition-Based Computational Algorithms for Fast Frequency Response Function Computations**  
Avery, P., Farhat, C.  
2005
- **A Time-Decomposed Parallel Implicit Algorithm for Accelerating the Solution of Second-Order Hyperbolic Problems**  
Farhat, C., Cortial, J., Bavestrello, H., Dastillung, C.  
2005
- **Adaptation of POD-based Aeroelastic ROMs for Varying Mach Number and Angle of Attack: Application to a Complete F-16 Configuration**  
Lieu, T., Farhat, C.  
2005
- **POD-based Aeroelastic Analysis of a Complete F-16 Configuration: ROM Adaptation and Demonstration**  
Lieu, T., Farhat, C., Lesoinne, M.  
2005
- **On Two Extensions of the FETI-DP Method for Constrained Linear System**  
Bavestrello, H., Avery, P., Farhat, C., Lesoinne, M.  
2005
- **On the Numerical Stability of a Class of Loosely-Coupled, Higher-Order Fluid/Structure Solution Algorithms**  
Farhat, C., Haegland, B.  
2005
- **Computational Algorithms for Fast Frequency Response Function Computations**  
Farhat, C., Reese, G.  
2005
- **A Time-Domain-Decomposed Implicit Methodology for the Time-Parallel Solution of Second-Order Hyperbolic Problems**  
Cortial, J., Farhat, C.  
2005
- **The Discontinuous Enrichment Method (DEM) for Multiscale Analysis** *Septieme Colloque National en Calcul des Structures, Giens 2005*  
Farhat, C.  
edited by Ohayon, R., Grellier, J-P., Rassinoux, A.  
Hermès Science Publications.2005: 33–34
- **An Iterative Domain Decomposition Method for the Solution of a Class of Indefinite Problems in Computational Structural Dynamics** *IMACS Journal of Applied Numerical Mathematics*  
Farhat, C., Li, J.  
2005; 54: 150-166
- **A FETI method for a class of indefinite or complex second- or fourth-order problems** *15th International Conference on Domain Decomposition Methods in Science and Engineering*  
Farhat, C., Li, J., Lesoinne, M., Avery, P.  
SPRINGER-VERLAG BERLIN.2005: 19–34
- **Higher-order extensions of a discontinuous Galerkin method for mid-frequency Helmholtz problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Tezaur, R., Weidemann-Goiran, P.  
2004; 61 (11): 1938-1956
- **Improved accuracy for the Helmholtz equation in unbounded domains** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Turkel, E., Farhat, C., Hetmaniuk, U.  
2004; 59 (15): 1963-1988
- **A discontinuous Galerkin method with plane waves and Lagrange multipliers for the solution of short wave exterior Helmholtz problems on unstructured meshes** *WAVE MOTION*  
Farhat, C., Wiedemann-Goiran, P., Tezaur, R.  
2004; 39 (4): 307-317

- **Dynamic-data-driven real-time computational mechanics environment** *4th International Conference on Computational Science (ICCS 2004)*  
Michopoulos, J., Farhat, C., Houstis, E.  
SPRINGER-VERLAG BERLIN.2004: 693–700
- **The Discontinuous Enrichment Method for Multiscale Analysis**  
Farhat, C., Franca, L., Harari, I.  
2004
- **Real-Time Data-Driven Simulation of Continuum Systems**  
Michopoulos, J., G., Farhat, C., Houstis, E., N.  
2004
- **A Stress-Control-Based Live-Fire Ground Testing Methodology**  
Bou-Mosleh, C., Farhat, C., Maute, K.  
2004
- **CFD-Based Nonlinear Computational Aeroelasticity** *Encyclopedia of Computational Mechanics*  
Farhat, C.  
edited by Stein, E., Borst, R., De, Hughes, T.  
John Wiley & Sons.2004: 1
- **Shape Optimization with F-Function Balancing for Reducing the Sonic Boom Initial Shock Pressure Rise** *The International Journal of Aeroacoustics*  
Farhat, C., Argrow, B., Nikbay, M., Maute, K.  
2004; 3: 361-377
- **A numerically scalable dual-primal substructuring method for the solution of contact problems - part I: the frictionless case** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Avery, P., Rebel, G., Lesoinne, M., Farhat, C.  
2004; 193 (23-26): 2403-2426
- **Design and analysis of robust ALE time-integrators for the solution of unsteady flow problems on moving grids** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Geuzaine, P.  
2004; 193 (39-41): 4073-4095
- **A variational multiscale method for the large eddy simulation of compressible turbulent flows on unstructured meshes - Application to vortex shedding** *5th World Congress on Computational Mechanics*  
Koobus, B., Farhat, C.  
ELSEVIER SCIENCE SA.2004: 1367–83
- **Design and analysis of ALE schemes with provable second-order time-accuracy for inviscid and viscous flow simulations** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Geuzaine, P., Grandmont, C., Farhat, C.  
2003; 191 (1): 206-227
- **A fictitious domain decomposition method for the solution of partially axisymmetric acoustic scattering problems. Part 2: Neumann boundary conditions** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Hetmaniuk, U., Farhat, C.  
2003; 58 (1): 63-81
- **Multiple-stencil dispersion analysis of the Lagrange multipliers in a discontinuous Galerkin method for the Helmholtz equation** *JOURNAL OF COMPUTATIONAL ACOUSTICS*  
Harari, I., Farhat, C., Hetmaniuk, U.  
2003; 11 (2): 239-254
- **A finite element-based fictitious domain decomposition method for the fast solution of partially axisymmetric sound-hard acoustic scattering problems** *FINITE ELEMENTS IN ANALYSIS AND DESIGN*  
Hetmaniuk, U., Farhat, C.  
2003; 39 (8): 707-725

- **Aeroelastic dynamic analysis of a full F-16 configuration for various flight conditions** *AIAA JOURNAL*  
Geuzaine, P., Brown, G., Harris, C., Farhat, C.  
2003; 41 (3): 363-371
- **Sensitivity analysis and design optimization of three-dimensional non-linear aeroelastic systems by the adjoint method** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Maute, K., Nikbay, M., Farhat, C.  
2003; 56 (6): 911-933
- **Application of unsteady fluid-structure methods to problems in aeronautics and space** *French-Australian Workshop on Coupling of Fluids, Structures and Waves in Aeronautics*  
Dervieux, A., Koobus, B., Schall, E., Lardat, R., Farhat, C.  
SPRINGER-VERLAG BERLIN.2003: 57-70
- **Data Driven Aspects of an Architecture for a Multiphysics Applications Environmen**  
Michopoulos, J., Tsompanopoulou, P., Houstis, E., Lesoinne, M., Lechenault, F., Farhat, C.  
2003
- **Design and Time-Accuracy Analysis of ALE Schemes for Inviscid and Viscous Flow Computations on Moving Meshes**  
Geuzaine, P., Farhat, C.  
2003
- **A Symbolic Computational Framework Architecture for Automating Constitutive Modeling Encapsulation**  
Michopoulos, J., Lesoinne, M., Lechenault, F., Tsompanopoulou, P., Houstis, E., Farhat, C.  
2003
- **A Provably Second-Order Time-Accurate, Staggered, and Yet Subiteration-Free Algorithm for Transient Nonlinear Fluid-Structure Interaction Problems**  
Farhat, C., Zee, K., van der, Geuzaine, P.  
2003
- **A Scalable Dual-Primal Domain Decomposition Method for the Solution of Contact Problems with Friction**  
Rebel, G., Farhat, C., Lesoinne, M., Avery, P.  
2003
- **A High-Order Discontinuous Galerkin Method with Plane Waves and Lagrange Multipliers for the Solution of Short Wave Acoustic Scattering Problems**  
Farhat, C., Wiedemann-Goiran, P.  
2003
- **Design Architecture of a Data Driven Environment for Multiphysics Applications**  
Michopoulos, J., Tsompanopoulou, P., Houstis, E., Rice, J., Farhat, C., Lesoinne, M.  
2003
- **Time-Decomposed Parallel Time-Integrators: Theory and Feasibility Studies for Fluid, Structure, and Fluid-Structure Applications** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Chandesaris, M.  
2003; 58: 1397-1434
- **A discontinuous Galerkin method with Lagrange multipliers for the solution of Helmholtz problems in the mid-frequency regime** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Harari, I., Hetmaniuk, U.  
2003; 192 (11-12): 1389-1419
- **Application of a three-field nonlinear fluid-structure formulation to the prediction of the aeroelastic parameters of an F-16 fighter** *2nd Conference on Applied Mathematics for Industrial Flow Problems (AMIF)*  
Farhat, C., Geuzaine, P., Brown, G.  
PERGAMON-ELSEVIER SCIENCE LTD.2003: 3-29
- **On the solution of inverse obstacle acoustic scattering problems with a limited aperture** *6th International Conference on Mathematical and Numerical Aspects of Wave Propagation (WAVES 2003)*  
Djellouli, R., Tezaur, R., Farhat, C.

SPRINGER-VERLAG BERLIN.2003: 625–630

- **The discontinuous enrichment method for multiscale analysis** *Workshop on Multiscale Computational Mechanics for Materials and Structures*  
Farhat, C., Harari, I., Hetmaniuk, U.  
ELSEVIER SCIENCE SA.2003: 3195–3209
- **DDEMA: A data driven environment for multiphysics applications** *International Conference on Computational Science (ICCS 2003)*  
Michopoulos, J., Tsompanopoulou, P., Houstis, E., Rice, J., Farhat, C., Lesoinne, M., Lechenault, F.  
SPRINGER-VERLAG BERLIN.2003: 309–318
- **On the solution of three-dimensional inverse obstacle acoustic scattering problems by a regularized Newton method** *INVERSE PROBLEMS*  
Farhat, C., Tezaur, R., Djellouli, R.  
2002; 18 (5): 1229-1246
- **A fictitious domain decomposition method for the solution of partially axisymmetric acoustic scattering problems. Part I: Dirichlet boundary conditions** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Hetmaniuk, U.  
2002; 54 (9): 1309-1332
- **Three-dimensional finite element calculations in acoustic scattering using arbitrarily shaped convex artificial boundaries** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Tezaur, R., Macedo, A., Farhat, C., Djellouli, R.  
2002; 53 (6): 1461-1476
- **A three-dimensional torsional spring analogy method for unstructured dynamic meshes** *COMPUTERS & STRUCTURES*  
Degand, C., Farhat, C.  
2002; 80 (3-4): 305-316
- **A blended fictitious/real domain decomposition method for partially axisymmetric exterior Helmholtz problems with Dirichlet boundary conditions** *Workshop on Domain Decomposition*  
Hetmaniuk, U., Farhat, C.  
SPRINGER-VERLAG BERLIN.2002: 1–26
- **Three-Field Based Nonlinear Aeroelastic Simulation Technology: Status and Application to the Flutter Analysis of an F-16 Configuration**  
Geuzaine, P., Brown, G., Farhat, C.  
2002
- **A Shape Optimization Methodology for Reducing the Sonic Boom Initial Pressure Rise**  
Farhat, C., Maute, K., Argrow, B., Nikbay, M.  
2002
- **Scalability of the Generalized FETI-H Method for Coupled Elasto-Acoustic Scattering Problems**  
Tezaur, R., Farhat, C., Mandel, J.  
edited by A., G., Mang, F.  
2002
- **Salinas: A Scalable Software for High-Performance Structural and Solid Mechanics Simulations**  
Bhardwaj, M., Pierson, K., Reese, G., Walsh, T., Day, D., Alvin, K.  
2002
- **Three-Field-Based Nonlinear Solution Strategy for Aeroelastic Problems**  
Geuzaine, P., Farhat, C.  
edited by A., G., Mang, F.  
2002
- **MDA/MDO: Non-Technical Barriers and Challenges**  
Farhat, C.  
2002
- **Material Softening Issues in a Multiphysics Virtual Wind Tunnel Environmen**  
Michopoulos, J., Mast, P., Badaliance, R., Chwastyk, T., Gause, L., Farhat, C.

2002

● **Linear-Theory-Based Shape Optimization for Sonic Boom Minimization**

Argrow, B., Farhat, C., Maute, K., Nikbay, M.

2002

● **Large-Scale Nonlinear Aeroelastic Computations: Flutter, LCO and Buffet Investigations**

Farhat, C.

edited by A., G., Mang, F.

2002

● **Finite Volume Discretization on Unstructured Meshes of the Multiscale Formulation of Large Eddy Simulations**

Farhat, C., Koobus, B.

edited by A., G., Mang, F.

2002

● **Nonlinear Flutter Analysis of an F-16 in Stabilized, Accelerated, and Increased Angle of Attack Configurations**

Farhat, C., Geuzaine, P., Brown, G., Harris, C.

2002

● **Conceptual Layout of Aeroelastic Wing Structures by Topology Optimization**

Maute, K., Nikbay, M., Farhat, C.

2002

● **An Iterative Method for the Solution of Three-Dimensional Inverse Acoustic Scattering Problems**

Farhat, C., Tezaur, R., Djellouli, R.

2002

● **An Integrated Platform for the Simulation of Fluid-Structure-Thermal Interaction Problems**

Tran, H., Farhat, C.

2002

● **A Shape Optimization Methodology with F-function load balancing for Mitigating the Sonic Boom**

Farhat, C., Argrow, B., Nikbay, M., Maute, K.

2002

● **A Domain Decomposition Method with Lagrange Multipliers for the Massively Parallel Solution of Large-Scale Contact Problems**

Traore, k., F., Farhat, C., Lesoinne, M., Dureisseix, D.

edited by A., G., Mang, F.

2002

● **A Discontinuous Galerkin Method with Analytical Shape Functions for Helmholtz Problems in the Medium Range Frequency Regime**

Farhat, C., Hetmaniuk, U., Harari, I.

edited by A., G., Mang, F.

2002

● **The discrete geometric conservation law and the nonlinear stability of ALE schemes for the solution of flow problems on moving grids** *JOURNAL OF COMPUTATIONAL PHYSICS*

Farhat, C., Geuzaine, P., Grandmont, C.

2001; 174 (2): 669-694

● **Coupled analytical sensitivity analysis and optimization of three-dimensional nonlinear aeroelastic systems** *AIAA JOURNAL*

Maute, K., Nikbay, M., Farhat, C.

2001; 39 (11): 2051-2061

● **Iterative solution of large-scale acoustic scattering problems with multiple right hand-sides by a domain decomposition method with Lagrange multipliers** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*

Tezaur, R., Macedo, A., Farhat, C.

2001; 51 (10): 1175-1193



- **CFD-based aeroelastic eigensolver for the subsonic, transonic, and supersonic regimes** *35th Aerospace Science Meeting*  
Lesoinne, M., Farhat, C.  
AMER INST AERONAUT ASTRONAUT.2001: 628–35
- **A fast method for solving acoustic scattering problems in frequency bands** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Djellouli, R., Farhat, C., Tezaur, R.  
2001; 168 (2): 412-432
- **FETI-DP: a dual-primal unified FETI method - part I: A faster alternative to the two-level FETI method** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Lesoinne, M., LETALLEC, P., Pierson, K., Rixen, D.  
2001; 50 (7): 1523-1544
- **A linearized method for the frequency analysis of three-dimensional fluid/structure interaction problems in all flow regimes** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Lesoinne, M., Sarkis, M., Hetmaniuk, U., Farhat, C.  
2001; 190 (24-25): 3121-3146
- **The Discontinuous Enrichment Method for Wave Propagation**  
Farhat, C., Harari, I.  
2001
- **On the Solution of Three-Dimensional Inverse Acoustic Scattering Problems**  
Farhat, C., Tezaur, R., Djellouli, R.  
2001
- **The Discrete Geometric Conservation Law and its Effects on Nonlinear Stability and Accuracy**  
Farhat, C., Geuzaine, P., Grandmont, C.  
2001
- **High-Performance Computing for the Optimization of Aeroelastic Systems**  
Maute, K., Nikbay, M., Farhat, C.  
2001
- **Design of Efficient Partitioned Procedures for Transient Nonlinear Aeroelastic Problems Based on Energy Exchange Criteria**  
Piperno, S., Farhat, C.  
2001
- **A Helmholtz Solver for Partially Axisymmetric Sound-Soft Scatterers**  
Farhat, C., Hetmaniuk, U.  
2001
- **A Fictitious Domain Decomposition Method for High-Frequency Acoustic Scattering Problems** *In: Domain Decomposition Methods in Sciences and Engineering*  
Hetmaniuk, U., Farhat, C.  
edited by Chan, T., Kako, T., Kawarada, H.  
Domain Decomposition Press, Bergen.2001: 365–372
- **Computational Methods: Linear Algebra, Generalized Inverse, SVD** *Encyclopedia of Vibration*  
Farhat, C., Rixen, D.  
edited by Braun, S., G., Ewins, D., J., Rao, S., S.  
Academic Press Ltd.2001: 710–720
- **Partitioned Procedures for the Transient Solution of Coupled Aeroelastic Problems - Part II: Energy Transfer Analysis and Three-Dimensional Applications** *Computer Methods in Applied Mechanics and Engineering*  
Piperno, S., Farhat, C.  
2001; 190: 3147-3170
- **Partitioned Analysis of Coupled Mechanical Systems** *Computer Methods in Applied Mechanics and Engineering*  
Felippa, C., Park, K., C., Farhat, C.

2001; 190: 3247-3270

- **Coupled Multiphysics Simulation of Composite Material Softening in a Virtual Wind Tunnel Environment** *Sixth U.S. National Congress on Computational Mechanics, Dearborn, Michigan*  
Group, C., Farhat, C., Lesoinne, M.  
2001
- **A Numerically Scalable Domain Decomposition Method for the Solution of Frictionless Contact Problems** *International Journal for Numerical Methods in Engineering*  
Dureisseix, D., Farhat, C.  
2001; 50: 2643-2666
- **A CFD Based Method for Solving Aeroelastic Eigenproblems in the Subsonic, Transonic, and Supersonic Regimes** *AIAA Journal of Aircraft*  
Lesoinne, M., Farhat, C.  
2001; 38: 628-635
- **Multidisciplinary simulation of the maneuvering of an aircraft** *ENGINEERING WITH COMPUTERS*  
Farhat, C., Pierson, K., Degand, C.  
2001; 17 (1): 16-27
- **Large-scale optimization of aeroelastic systems** *International Conference on Trends in Computational Structural Mechanics*  
Maute, K., Nikbay, M., Farhat, C.  
INT CENTER NUMERICAL METHODS ENGINEERING.2001: 613-622
- **The discontinuous enrichment method** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Harari, I., FRANCA, L. P.  
2001; 190 (48): 6455-6479
- **A scalable dual-primal domain decomposition method** *International Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Industrial Applications (SPARSE 99)*  
Farhat, C., Lesoinne, M., Pierson, K.  
JOHN WILEY & SONS LTD.2000: 687-714
- **A two-level domain decomposition method for the iterative solution of high frequency exterior Helmholtz problems** *NUMERISCHE MATHEMATIK*  
Farhat, C., Macedo, A., Lesoinne, M.  
2000; 85 (2): 283-308
- **Finite element solution of two-dimensional acoustic scattering problems using arbitrarily shaped convex artificial boundaries** *JOURNAL OF COMPUTATIONAL ACOUSTICS*  
Djellouli, R., Farhat, C., Macedo, A., Tezaur, R.  
2000; 8 (1): 81-99
- **Application of the FETI method to ASCI problems - scalability results on 1000 processors and discussion of highly heterogeneous problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Bhardwaj, M., Day, D., Farhat, C., Lesoinne, M., Pierson, K., Rixen, D.  
2000; 47 (1-3): 513-535
- **Computation of unsteady viscous flows around moving bodies using the k-epsilon turbulence model on unstructured dynamic grids** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Koobus, B., Farhat, C., Tran, H.  
2000; 190 (11-12): 1441-1466
- **Two-level domain decomposition methods with Lagrange multipliers for the fast iterative solution of acoustic scattering problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Macedo, A., Lesoinne, M., Roux, F. X., Magoules, F., de la Bourdonnaie, A.  
2000; 184 (2-4): 213-239
- **Optimization of Aeroelastic Systems using Coupled Analytical Sensitivities**  
Maute, K., Lesoinne, M., Farhat, C.  
2000

- **CFD Based Simulation of the Unsteady Aeroelastic Response of a Maneuvering Vehicle**  
Farha, C., Pierson, K., Degand, C.  
2000
- **Improved Finite Element Computation of Time-Harmonic Acoustics by Discontinuous Plane-Wave Enrichment**  
Farhat, C., Harari, I., Franca, L., P.  
2000
- **Expanding a Flutter Envelope Using Accelerated Flight Data: Application to an F-16 Fighter Configuration**  
Farhat, C., Harris, C., Rixen, D.  
2000
- **Energy Based Design and Analysis of Staggered Solvers for Nonlinear Transient Aeroelastic Problems**  
Piperno, S., Farhat, C.  
2000
- **Analytically Based Sensitivity Analysis and Optimization of Nonlinear Aeroelastic Systems**  
Maute, K., Nikbay, M., Farhat, C.  
2000
- **A Scalable Substructuring Method for Static, Transient, and Vibration Analyses on Massively Parallel Processors**  
Farhat, C., Lesoinne, M., Pierson, K.  
2000
- **A FETI Based Algorithm for the Iterative Solution of Unilateral Contact Problems**  
Dureisseix, D., Farhat, C.  
2000
- **A CFD Based Simulation of the Unsteady Aeroelastic Response of a Maneuvering Vehicle**  
Farhat, C., Pierson, K., Degand, C.  
2000
- **in: Mathematical and Numerical Aspects of Wave Propagation** *An Efficient Substructuring Method for Analyzing Acoustics in a Cocentric Hole-Cavity Resonator*  
Gmati, N., Farhat, C., Hetmaniuk, U.  
edited by Bermudez, A.  
SIAM.2000: 817-821
- **Vistas in Domain Decomposition and Parallel Processing in Computational Mechanics** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., LeTallec, P.  
2000; 184: 2-4
- **A Discontinuous Galerkin-PW Method for the Solution of the High-Frequency Acoustic Scattering Problems**  
Farhat, C., Harari, I., Franca, L., P.  
2000
- **A Discontinuous Finite Element Method for the Helmholtz Equation**  
Farhat, C., Harari, I., Franca, L., P.  
2000
- **in: Mathematical and Numerical Aspects of Wave Propagation** *Finite Element Solution of Three-Dimensional Acoustic Scattering Problems Using Arbitrarily Shaped Convex Artificial Boundaries*  
Djellouli, R., Farhat, C., Macedo, A., Tezaur, R.  
edited by Bermudez, A.  
SIAM.2000: 896-900
- **Two-Level Domain Decomposition Methods With Lagrange Multipliers for the Fast Iterative Solution of Acoustic Scattering Problems** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Macedo, A., Lesoinne, M., Roux, F., X., Magoulès, F., Bourdonnaie, A., de La  
2000; 184: 213-240

- **The Second Generation of FETI Methods and their Application to the Parallel Solution of Large-Scale Linear and Geometrically Nonlinear Structural Analysis Problems** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Pierson, K., Lesoinne, M.  
2000; 184: 333-374
- **On the Significance of the Geometric Conservation Law for Flow Computations on Moving Meshes** *Computer Methods in Applied Mechanics and Engineering*  
Guillard, H., Farhat, C.  
2000; 190: 1467-1482
- **Interaction Between a Pulsating Flow and a Perforated Membrane** *La Revue Europeenne des Elements Finis*  
Lardat, R., Carpentier, R., Koobus, B., Schall, E., Dervieux, A., Farhat, C.  
2000; 9 (6/7): 805-817
- **Design of Efficient Partitioned Procedures for the Transient Solution of Aeroelastic Problems** *La Revue Europeenne des Elements Finis*  
Piperno, S., Farhat, C.  
2000; 9 (6/7): 655-680
- **Application of the FETI Method to ASCI Problems: Scalability Results on One-Thousand Processors and Discussion of Highly Heterogeneous Problems** *International Journal for Numerical Methods in Engineering*  
Bhardwaj, M., Day, D., Farhat, C., Lesoinne, M., Pierson, K., Rixen, D.  
2000; 47: 513-536
- **Analysis of a Possible Coupling in a Thrust Inverter** *La Revue Europeenne des Elements Finis*  
Lardat, R., Koobus, B., Schall, E., Dervieux, A., Farhat, C.  
2000; 9 (6/7): 819-834
- **Aeroelastic Coupling Between a Thin Divergent and High Pressure Jets** *La Revue Europeenne des Elements Finis*  
Shall, E., Lardat, R., Dervieux, A., Koobus, B., Farhat, C.  
2000; 9 (6/7): 835-851
- **The second generation FETI methods and their application to the parallel solution of large-scale linear and geometrically non-linear structural analysis problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Pierson, K., Lesoinne, M.  
2000; 184 (2-4): 333-374
- **Two efficient staggered algorithms for the serial and parallel solution of three-dimensional nonlinear transient aeroelastic problems** *4th World Congress on Computational Mechanics*  
Farhat, C., Lesoinne, M.  
ELSEVIER SCIENCE SA.2000: 499-515
- **Finite element solution of three-dimensional acoustic scattering problems using arbitrarily shaped convex artificial boundaries** *5th International Conference on Mathematical and Numerical Aspects of Wave Propagation*  
Djellouli, R., Farhat, C., Macedo, A., Tezaur, R.  
SIAM.2000: 896-900
- **An efficient substructuring method for analyzing acoustics in a concentric hole-cavity resonator** *5th International Conference on Mathematical and Numerical Aspects of Wave Propagation*  
Gmati, N., Farhat, C., Hetmaniuk, U.  
SIAM.2000: 817-821
- **Theoretical comparison of the FETI and algebraically partitioned FETI methods, and performance comparisons with a direct sparse solver** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Rixen, D. J., Farhat, C., Tezaur, R., Mandel, J.  
1999; 46 (4): 501-533
- **On the characterization of the Frechet derivative with respect to a Lipschitz domain of the acoustic scattered field** *JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS*  
Djellouli, R., Farhat, C.  
1999; 238 (1): 259-276

- **A scalable substructuring method by Lagrange multipliers for plate bending problems** *SIAM JOURNAL ON NUMERICAL ANALYSIS*  
Mandel, J., Tezaur, R., Farhat, C.  
1999; 36 (5): 1370-1391
- **Continuous Frechet differentiability with respect to a Lipschitz domain and a stability estimate for direct acoustic scattering problems** *IMA JOURNAL OF APPLIED MATHEMATICS*  
Djellouli, R., Farhat, C., Mandel, J., Vanek, P.  
1999; 63 (1): 51-69
- **On the implicit time integration of semi-discrete viscous fluxes on unstructured dynamic meshes** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Koobus, B., Farhat, C.  
1999; 29 (8): 975-996
- **Second-order time-accurate and geometrically conservative implicit schemes for flow computations on unstructured dynamic meshes** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Koobus, B., Farhat, C.  
1999; 170 (1-2): 103-129
- **A simple and efficient extension of a class of substructure based preconditioners to heterogeneous structural mechanics problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Rixen, D. J., Farhat, C.  
1999; 44 (4): 489-516
- **FETI-H: a scalable domain decomposition method for high frequency exterior Helmholtz problems** *in: Domain Decomposition Methods in Sciences and Engineering*  
Farhat, C., Macedo, A., Tezaur, R.  
edited by Lai, C., J., Bjorstad, P., Cross, M.  
Domain Decomposition Press, Bergen.1999: 228–238
- **Simulation of the Continuous Parametric Identification of an Accelerating Aeroelastic System**  
Rixen, D., Farhat, C., Peterson, L., D.  
1999
- **Investigation of the Aeroelastic Coupling Between A Nozzle and a Supersonic Jet**  
Schall, E., Koobus, B., Farhat, C.  
1999
- **An Energy Transfer Criterion for Assessing Partitioned Procedures Applied to the Solution of Nonlinear Transient Aeroelastic Problems**  
Piperno, S., Farhat, C.  
1999
- **On the Significance of the GCL for Flow Computations on Moving Meshes**  
Guillard, H., Farhat, C.  
1999
- **A FETI-Based Algorithm for the Iterative Solution of Unilateral Contact Problems**  
Dureissex, D., Farhat, C.  
1999
- **A Computational Methodology for the Simulation of Flow Problems Past Accelerating Rigid and Flexible Obstacles**  
Tezaur, R., Puppin-Macedo, A., Farhat, C.  
1999
- **Finite Element Solution of Two-Dimensional Acoustic Scattering Problems Using Arbitrarily Shaped Convex Artificial Boundaries**  
Macedo, A., Djellouli, R., Farhat, C., Tezaur, R.  
edited by M., L.R.F., Pimenta, R.M., S., Brasil, E.  
1999
- **An Efficient Substructuring Method for Analyzing Structures with Major Axisymmetric Components**

- Farhat, C., Hetmaniuk, U., Rixen, D.  
1999
- **Incorporation of linear multipoint constraints in substructure based iterative solvers. Part 1: A numerically scalable algorithm** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Lacour, C., Rixen, D.  
1998; 43 (6): 997-1016
  - **Torsional springs for two-dimensional dynamic unstructured fluid meshes** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Degand, C., Koobus, B., Lesoinne, M.  
1998; 163 (1-4): 231-245
  - **Higher-order subiteration-free staggered algorithm for nonlinear transient aeroelastic problems** *AIAA JOURNAL*  
Lesoinne, M., Farhat, C.  
1998; 36 (9): 1754-1757
  - **A unified framework for accelerating the convergence of iterative substructuring methods with Lagrange multipliers** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Chen, P. S., Risler, F., Roux, F. X.  
1998; 42 (2): 257-288
  - **Load and motion transfer algorithms for fluid/structure interaction problems with non-matching discrete interfaces: Momentum and energy conservation, optimal discretization and application to aeroelasticity** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Lesoinne, M., LETALLEC, P.  
1998; 157 (1-2): 95-114
  - **The two-level FETI method Part II: Extension to shell problems, parallel implementation and performance results** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Chen, P. S., Mandel, J., Roux, F. X.  
1998; 155 (1-2): 153-179
  - **The two-level FETI method for static and dynamic plate problems Part I: An optimal iterative solver for biharmonic systems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Mandel, J.  
1998; 155 (1-2): 129-151
  - **A two-step, two-field hybrid method for the static and dynamic analysis of substructure problems with conforming and non-conforming interfaces** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Rixen, D., Farhat, C., Geradin, M.  
1998; 154 (3-4): 229-264
  - **On the general solution by a direct method of a large-scale singular system of linear equations: Application to the analysis of floating structures** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Geradin, M.  
1998; 41 (4): 675-696
  - **Re-engineering of an aeroelastic code for solving eigen-problems in all flight regimes** *4th European Computational Fluid Dynamics Conference*  
Lesoinne, M., Farhat, C.  
JOHN WILEY & SONS.1998: 1052-1061
  - **A method of finite element tearing and interconnecting for the Helmholtz problem** *2nd Euro-Conference on Parallel and Distributed Computing for Computational Mechanics*  
de la Bourdonnaye, A., Farhat, C., Macedo, A., Magoules, F., Roux, F. X.  
CIVIL COMP PRESS.1998: 41-54
  - **Unusual Stabilized Finite Element Methods and Residual-Free Bubbles**  
Franca, L., Farhat, C., Lesoinne, M., Russo, A.  
1998
  - **Second-Order Implicit Schemes that Satisfy the GCL for Flow Computations on Dynamic Grids**  
Koobus, B., Farhat, C.

1998

- **Numerical Solution of Vortex Dominated Flow Problems with Moving Grids**  
Tran, H., Koobus, B., Farhat, C.  
1998
- **Higher-Order Staggered and Subiteration Free Algorithm for Coupled Dynamic Aeroelasticity Problems**  
Farhat, C., Lesoinne, M.  
1998
- **A Conservative Algorithm for Exchanging Aerodynamic and Elastodynamic Data in Aeroelastic Systems**  
Farhat, C., Lesoinne, M.  
1998
- **Evaluating the Effect of Limited Instrumentation on the Updating of Finite Element Models**  
Brown, G., Djellouli, R., Farhat, C., Hemez, F.  
1998
- **Enhanced Partitioned Procedures for Solving Nonlinear Transient Aeroelastic Problems**  
Farhat, C., Lesoinne, M.  
1998
- **An Improved Method of Spring Analogy for Dynamic Unstructured Fluid Meshes**  
Farhat, C., Degand, C., Koobus, B., Lesoinne, M.  
1998
- **Variable Degree Schwarz Methods for Unsteady Compressible Flows** *in: Domain Decomposition Methods for Partial Differential Equations*  
Cai, X.-C., Farhat, C., Sarkis, M.  
edited by Bjorstad, P., Espedal, M., Keyes, D.  
Domain Decomposition Press, Bergen.1998: 682–689
- **Sensitivity Analysis of Direct Acoustic Scattering Problems with Respect to Shape, Frequency and Incident Direction** *in: Mathematical and Numerical Aspects of Wave Propagation*  
Djellouli, R., Farhat, C.  
edited by DeSanto, J.  
SIAM.1998: 496–498
- **Scalable Substructuring by Lagrange Multipliers in Theory and in Practice** *in: Domain Decomposition Methods for Partial Differential Equations*  
Farhat, C., Mandel, J.  
edited by Bjorstad, P., Espedal, M., Keyes, D.  
Domain Decomposition Press, Bergen.1998: 20–30
- **Preconditioning the FETI and Balancing Domain Decomposition Methods for Problems with Intra- and Inter-subdomain Coefficient Jumps** *in: Domain Decomposition Methods for Partial Differential Equations*  
Rixen, D., Farhat, C.  
edited by Bjorstad, P., Espedal, M., Keyes, D.  
Domain Decomposition Press, Bergen.1998: 472–479
- **Parallel Implementation of the Two-Level FETI Method** *in: Domain Decomposition Methods for Partial Differential Equations*  
Roux, F., X., Farhat, C.  
edited by Bjorstad, P., Espedal, M., Keyes, D.  
Domain Decomposition Press, Bergen.1998: 480–487
- **The Two-Level FETI Method for Static and Dynamic Plate Problems - Part I: an Optimal Iterative Solver for Biharmonic Systems** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Mandel, J.  
1998; 155: 129-152
- **The Two-Level FETI Method - Part II: Extension to Shell Problems, Parallel Implementation and Performance Results** *Computer Methods in Applied Mechanics and Engineering*

- Farhat, C., Chen, P., S., Mandel, J., Roux, F., X.  
1998; 155: 153-180
- **Parallel Implementation of Direct Solution Strategies for the Coarse Grid Solvers in 2-Level FETI Methods** *Contemporary Mathematics*  
Roux, F., X., Farhat, C.  
1998; 218: 158-173
  - **On the General Solution by a Direct Method of a Large-Scale Singular System of Linear Equations: Application to the Analysis of Floating Structure** *International Journal for Numerical Methods in Engineering*  
Farhat, C., G eradin, M.  
1998; 41: 675-696
  - **Numerical Simulation of Vortex Shedding Flows Past Moving Obstacles Using the k-e Turbulence Model on Unstructured Dynamic Meshes** *La Revue Europ enne des Elements Finis*  
Tran, H., Koobus, B., Farhat, C.  
1998; 6 (5/6): 611-642
  - **Incorporation of Linear Multipoint Constraints in Substructure Based Iterative Solvers - Part I: a Numerically Scalable Algorithm** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Lacour, C., Rixen, D.  
1998; 43: 997-1016
  - **Fast Staggered Algorithms for the Solution of Three-Dimensional Nonlinear Aeroelastic Problems** *Numerical Unsteady Aerodynamic and Aeroelastic Simulation (l'Aerodynamique instationnaire numerique et la simulation de l'aeroelasticite), North Atlantic Treaty Organization (NATO)*  
Farhat, C., Lesoinne, M.  
1998
  - **A Unified Framework for Accelerating the Convergence of Iterative Substructuring Methods with Lagrange Multipliers** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Chen, P., S., Rislser, F., Roux, F., X.  
1998; 42: 257-288
  - **A Two-Step, Two-Field Hybrid Method for the Static and Dynamic Analysis of Substructure Problems with Conforming and Non-Conforming Interfaces** *Computer Methods in Applied Mechanics and Engineering*  
Rixen, D., Farhat, C., G eradin, M.  
1998; 154: 229-264
  - **A Non-Overlapping Domain Decomposition Method for the Exterior Helmholtz Problem** *Contemporary Mathematics*  
Bourdonnaye, A., de La, Farhat, C., Macedo, A., Magoul es, F., Roux, F., X.  
1998; 218: 42-66
  - **A Minimum Overlap Restricted Additive Schwarz Preconditioner and Applications in 3D Flow Simulations** *Contemporary Mathematics*  
Cai, X., -C., Farhat, C., Sarkis, M.  
1998; 218: 478-484
  - **Unusual stabilized finite element methods and residual free bubbles** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
FRANCA, L. P., Farhat, C., Lesoinne, M., Russo, A.  
1998; 27: 159-168
  - **Residual-free bubbles for the Helmholtz equation** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
FRANCA, L. P., Farhat, C., Macedo, A. P., Lesoinne, M.  
1997; 40 (21): 4003-?
  - **Extending sensitivity-based updating to lightly damped structures** *AIAA JOURNAL*  
Brown, G. W., Farhat, C., Hemez, F. M.  
1997; 35 (8): 1369-1377
  - **Improved damage location accuracy using strain energy-based mode selection criteria** *AIAA/ASME/ASCE/AHS/ASC 34th Structures, Structural Dynamics, and Materials Conference*  
Doebling, S. W., Hemez, F. M., Peterson, L. D., Farhat, C.  
AMER INST AERONAUT ASTRONAUT.1997: 693-99



- **Schwarz methods for the unsteady compressible Navier-Stokes equations on unstructured meshes** *8th International Conference on Domain Decomposition Methods for Partial Differential Equations*  
Cai, X. C., Farhat, C., Sarkis, M.  
JOHN WILEY & SONS LTD.1997: 453–460
- **Solving Inverse Mechanical Problems: A Challenge for Classical Structural Automotive Applications**  
Decaux, E., Duysens, J., Farhat, C., Hemez, F.  
1997
- **Design and Analysis of Staggered Fluid-Structure Time Integrators for Interface Momentum and Energy Conservation**  
Piperno, S., Farhat, C.  
1997
- **High Performance Computational Nonlinear Aeroelasticity**  
Farhat, C.  
1997
- **An Energy Conserving Load and Motion Transfer Algorithm for Fluid-Structure Interaction Problems with Non-Matching Discrete Interfaces**  
Farhat, C., Lesoinne, M., LeTallec, P.  
1997
- **A Simple and Unified Framework for Accelerating the Convergence of Iterative Substructuring Methods with Lagrange Multipliers**  
Farhat, C., Chen, P., S., Risler, F., Roux, F., X.  
1997
- **A Numerical Method for Solving Aeroelastic Eigenproblems in all Flight Regimes**  
Lesoinne, M., Farhat, C.  
1997
- **A Domain Decomposition Method for Helmholtz Problems**  
Farhat, C.  
1997
- **Overcoming Difficulties in the Updating of FE Models for Industrial Applications**  
Brown, G., Farhat, C., Hemez, F., Duysens, J., Decaux, E.  
1997
- **Re-engineering of an Aeroelastic Code for Solving Eigen Problems in all Flight Regimes** *Fluid-Structure Interactions, Aeroelasticity, Flow-Induced Vibration and Noise*  
Lesoinne, M., Farhat, C.  
edited by Freidmann, P., P., Paidoussis, M., P.  
ASME.1997: 205–215
- **Parallel and Distributed Solution of Coupled Nonlinear Dynamic Aeroelastic Response Problems** *Solving Large-Scale Problems in Mechanics: Parallel and Distributed Computer Applications*  
Farhat, C.  
edited by Papadrakakis, M., Wiley, J.  
1997: 243–302
- **Residual-Free Bubbles for the Helmholtz Equation** *International Journal for Numerical Methods in Engineering*  
Franca, L., Farhat, C., Macedo, A., Lesoinne, M.  
1997; 40: 4003-4009
- **Improved Damage Location Accuracy Using Strain Energy-Based Mode Selection Criteria** *AIAA Journal*  
Doebbling, S., W., Hemez, F., M., Peterson, L., D., Farhat, C.  
1997; 35 (4): 693-699
- **Extending Sensitivity Based Updating to Lightly Damped Structures** *AIAA Journal*  
Brown, G., Farhat, C., Hemez, F.  
1997; 35 (8): 1369-1377

- **High performance solution of three-dimensional nonlinear aeroelastic problems via parallel partitioned algorithms: Methodology and preliminary results** *ADVANCES IN ENGINEERING SOFTWARE*  
Farhat, C., Lesoinne, M., Stern, P., Lanteri, S.  
1997; 28 (1): 43-61
- **Geometric conservation laws for flow problems with moving boundaries and deformable meshes, and their impact on aeroelastic computations** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Lesoinne, M., Farhat, C.  
1996; 134 (1-2): 71-90
- **A retrofit based methodology for the fast generation and optimization of large-scale mesh partitions: Beyond the minimum interface size criterion** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
VanDerStraeten, D., Farhat, C., Chen, P. S., Keunings, R., Ozone, O.  
1996; 133 (1-2): 25-45
- **A Retrofit and Contraction Based Methodology for the Fast Generation and Optimization of Mesh Partitions: Beyond the Minimum Interface Size Criterion** *Computer Methods in Applied Mechanics and Engineering*  
Vanderstraeten, D., Farhat, C., Chen, P., S., Keunings, R., Zone, O.  
1996; 133: 25-45
- **Toward the Updating of Large-Scale Dynamic Finite Element Models Using Massive Instrumentation**  
Hemez, F., Farhat, C., Decaux, E., Duysens, J., Le Roy, P.  
1996
- **On the Accuracy, Stability, and Performance of the Solution of Three-Dimensional Nonlinear Transient Aeroelastic Problems by Partitioned Procedures**  
Farhat, C., Lesoinne, M.  
1996
- **Highly Accurate and Stable Algorithms for the Static and Dynamic Analyses of Independently Modeled Substructures**  
Rixen, D., Farhat, C., Gérardin, M.  
1996
- **Finite Element Model Updating of Lightly Damped Structures Using Complex Modes**  
Brown, G., Farhat, C.  
1996
- **Energy vs. Accuracy vs. Number of Actuators Trade-off Studies for the Shape Control of Space Truss Structures**  
Partch, R., Farhat, C.  
1996
- **Time-Accurate Schemes for Computing Two- and Three-Dimensional Viscous Fluxes on Unstructured Dynamic Meshes**  
Koobus, B., Farhat, C.  
1996
- **Massively Parallel Three-Dimensional Aeroelastic Analysis of Jet Engines**  
Gumaste, U., A., Felippa, C., A., Farhat, C.  
1996
- **High Performance Substructure-Based Scalable Algorithms for Implicit Nonlinear Shell Dynamics Computations**  
Farhat, C., Chen, P., S.  
1996
- **Computational Challenges in Large-Scale Transient Aeroelastic Simulations**  
Farhat, C.  
1996
- **A High Fidelity and High Performance Computational Methodology for the Solution of Viscous Aeroelastic Response Problems**  
Farhat, C., Koobus, B., Lesoinne, M.  
1996

- **A General and Efficient Methodology for Computing the Aeroelastic Mode Shapes of an Airframe System**  
Lesoinne, M., Farhat, C.  
1996
- **Geometric Conservation Laws for Flow Problems with Moving Boundaries and Deformable Meshes and Their Impact on Aeroelastic Computations** *Computer Methods in Applied Mechanics and Engineering*  
Lesoinne, M., Farhat, C.  
1996; 134: 71-90
- **MIXED EXPLICIT/IMPLICIT TIME INTEGRATION OF COUPLED AEROELASTIC PROBLEMS - 3-FIELD FORMULATION, GEOMETRIC CONSERVATION AND DISTRIBUTED SOLUTION** *2nd Japan/US Symposium on Finite Element Methods in Large-Scale Computational Fluid Dynamics*  
Farhat, C., Lesoinne, M., Maman, N.  
WILEY-BLACKWELL.1995: 807-35
- **A SCALABLE LAGRANGE MULTIPLIER BASED DOMAIN DECOMPOSITION METHOD FOR TIME-DEPENDENT PROBLEMS** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Chen, P. S., Mandel, J.  
1995; 38 (22): 3831-3853
- **IMPLICIT TIME INTEGRATION OF A CLASS OF CONSTRAINED HYBRID FORMULATIONS .1. SPECTRAL STABILITY THEORY** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Crivelli, L., Geradin, M.  
1995; 125 (1-4): 71-107
- **STRUCTURAL DAMAGE DETECTION VIA A FINITE-ELEMENT MODEL UPDATING METHODOLOGY** *MODAL ANALYSIS-THE INTERNATIONAL JOURNAL OF ANALYTICAL AND EXPERIMENTAL MODAL ANALYSIS*  
Hemez, F. M., Farhat, C.  
1995; 10 (3): 152-166
- **BUBBLE FUNCTIONS PROMPT UNUSUAL STABILIZED FINITE-ELEMENT METHODS** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
FRANCA, L. P., Farhat, C.  
1995; 123 (1-4): 299-308
- **MESH PARTITIONING FOR IMPLICIT COMPUTATIONS VIA ITERATIVE DOMAIN DECOMPOSITION - IMPACT AND OPTIMIZATION OF THE SUBDOMAIN ASPECT RATIO** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Maman, N., Brown, G. W.  
1995; 38 (6): 989-1000
- **BYPASSING NUMERICAL DIFFICULTIES ASSOCIATED WITH UPDATING SIMULTANEOUSLY MASS AND STIFFNESS MATRICES** *AIAA JOURNAL*  
Hemez, F. M., Farhat, C.  
1995; 33 (3): 539-546
- **UNSTRUCTURED CFD COMPUTATIONS ON THE KSR-1 - PRELIMINARY-RESULTS** *FUTURE GENERATION COMPUTER SYSTEMS*  
Lanteri, S., Farhat, C.  
1995; 11 (1): 27-33
- **TOP/DOMDEC - A SOFTWARE TOOL FOR MESH PARTITIONING AND PARALLEL-PROCESSING** *COMPUTING SYSTEMS IN ENGINEERING*  
Farhat, C., Lanteri, S., Simon, H. D.  
1995; 6 (1): 13-26
- **A Scalable Lagrange Multiplier Based Domain Decomposition Method for Implicit Time-Dependent Problems** *International Journal of Numerical Methods in Engineering*  
Farhat, C., Chen, P., S., Mandel, J.  
1995; 38: 3831-3854
- **BEYOND CONVENTIONAL MESH PARTITIONING ALGORITHMS AND THE MINIMUM EDGE CUT CRITERION - IMPACT ON REALISTIC APPLICATIONS** *7th SIAM Conference on Parallel Processing for Scientific Computing*  
VanDerStraeten, D., Keunings, R., Farhat, C.  
SIAM.1995: 611-614

- **Unusual Stabilized Finite Element Methods**  
Franca, L., P., Farhat, C.  
1995
- **On the Efficiency of Model Updating via Genetic Algorithms for Structural Damage Detection**  
Hemez, F., Farhat, C., Bacher, E., Vallat, S.  
1995
- **Improving the Convergence Rate of a Transient Substructuring Iterative Method Using the Rigid Body Modes of its Static Equivalent**  
Farhat, C., Hemez, F., Mandel, J.  
1995
- **Extending the Frontiers of Numerical Simulation in Complex Engineering Problems**  
Farhat, C.  
1995
- **Parallel Heterogeneous Algorithms for the Solution of Three-Dimensional Transient Coupled Aeroelastic Problems**  
Farhat, C., Lesoinne, M., Chen, P., S., Lantéri, S.  
1995
- **Geometric Conservation Laws for Aeroelastic Computations Using Unstructured Dynamic Meshes**  
Lesoinne, M., Farhat, C.  
1995
- **A Robust Methodology for the Simultaneous Updating of FE Mass and Stiffness Matrices**  
Farhat, C., Hemez, F.  
1995
- **Overlapping Schwarz Methods for Compressible Flow Problems on Unstructured Meshes**  
Cai, X.-C., Sarkis, M., Farhat, C.  
1995
- **High Fidelity Computational Methods for the Dynamic Solution of Nonlinear Coupled Aeroelastic Problems**  
Farhat, C.  
1995
- **Energy Reduction Methods for Static Shape Control of Space Truss Structures**  
Partch, R., Farhat, C.  
1995
- **Beyond Conventional Mesh Partitioning Algorithms and the Minimum Edge Cut Criterion: Impact on Realistic Applications** *Parallel Processing for Scientific Computing*  
Vanderstraeten, S., Keunings, R., Farhat, C.  
edited by Bailey, D.  
SIAM.1995: 611–614
- **Optimizing Substructuring Methods for Repeated Right Hand Sides, Scalable Parallel Coarse Solvers, and Global/Local Analysis** *Domain-Based Parallelism and Problem Decomposition Methods in Computational Science and Engineering*  
Farhat, C.  
edited by Keyes, D., Saad, Y., Truhlar, D., G.  
SIAM.1995: 141–160
- **Towards the Ultimate Iterative Substructuring Method: Combined Numerical and Parallel Scalability and Multiple Load Cases** *Journal of Computing Systems in Engineering*  
Farhat, C., Chen, P., S., Stern, P.  
1995; 5 (4-6): 337-350
- **TOP/DOMDEC, A Software Tool for Mesh Partitioning and Parallel Processing** *Journal of Computing Systems in Engineering*  
Farhat, C., Lantéri, S., Simon, H., D.  
1995; 6 (1): 13-26

- **Structural Damage Detection via a Finite Element Model Updating Methodology** *Modal Analysis*  
Hemez, F., Farhat, C.  
1995; 10 (3): 152-166
  
- **Partitioned Procedures for the Transient Solution of Coupled Aeroelastic Problems - Part I: Model Problem, Theory, and Two-Dimensional Application** *Computer Methods in Applied Mechanics and Engineering*  
Piperno, S., Farhat, C., Larroutourou, B.  
1995; 124 (1-2): 79-112
  
- **Mesh Partitioning for Implicit Computations via Iterative Domain Decomposition: Impact and Optimization of the Subdomain Aspect Ratio** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Maman, N., Brown, G.  
1995; 38: 989-1000
  
- **Large, out-of-core calculation runs on the IBM SP2** *Leading article NAS NEWS*  
Farhat, C.  
1995; 2 (1)
  
- **Implicit Time Integration of a Class of Constrained Hybrid Formulations - Part I: Spectral Stability Theory** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Crivelli, L., G eradin, M.  
1995; 125: 71-107
  
- **High Performance Simulation of Coupled Nonlinear Transient Aeroelastic Problems** *AGARD Report R-807, Special Course on Parallel Computing in CFD (L'Aerodynamique numerique et le calcul en parallele), North Atlantic Treaty Organization (NATO)*  
Farhat, C.  
1995
  
- **Static Condensation: an Old Idea Revisited** *Libro de Resumenes of the Cuarto Congreso Franco-Latinoamericano de Matem ticas Aplicadas: M todos Num ricos en Mec nica, Concepci n, Chile*  
Franca, L., P., Farhat, C., Lesoinne, M.  
1995: 26
  
- **Matching Fluid and Structure Meshes for Aeroelastic Computations: A Parallel Approach** *Computers & Structures*  
Maman, N., Farhat, C.  
1995; 54 (4): 779-785
  
- **Bubble Functions Prompt Unusual Stabilized Finite Element Methods** *Computer Methods in Applied Mechanics and Engineering*  
Franca, L., P., Farhat, C.  
1995; 123: 299-308
  
- **Approximation du Preconditionneur de Dirichlet pour la Resolution Iterative du Probleme d'Interface de la M thode Hybride FETI** *Second Colloque National en Calcul des Structures, Giens, France*  
Rixen, D., Farhat, C., G eradin, M.  
1995
  
- **Bypassing the Numerical Difficulties Associated with Updating Simultaneously Mass and Stiffness Matrices** *AIAA Journal*  
Hemez, F., Farhat, C.  
1995; 33 (3): 539-546
  
- **SIMULATION OF COMPRESSIBLE VISCOUS FLOWS ON A VARIETY OF MPPS - COMPUTATIONAL ALGORITHMS FOR UNSTRUCTURED DYNAMIC MESHES AND PERFORMANCE RESULTS** *Symposium on Parallel Finite Element Computations*  
Farhat, C., Lanteri, S.  
ELSEVIER SCIENCE SA.1994: 35-60
  
- **TOWARDS THE ULTIMATE ITERATIVE SUBSTRUCTURING METHOD - COMBINED NUMERICAL AND PARALLEL SCALABILITY, AND MULTIPLE LOAD CASES** *3rd National Symposium on Large-Scale Structural Analysis for High-Performance Computers and Workstations*  
Farhat, C., Chen, P. S., Stern, P.  
PERGAMON-ELSEVIER SCIENCE LTD.1994: 337-50

- **EXTENDING SUBSTRUCTURE BASED ITERATIVE SOLVERS TO MULTIPLE LOAD AND REPEATED ANALYSES** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Crivelli, L., Roux, F. X.  
1994; 117 (1-2): 195-209
- **ON THE LIMITATIONS OF BUBBLE FUNCTIONS** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
FRANCA, L. P., Farhat, C.  
1994; 117 (1-2): 225-230
- **A TRANSIENT FETI METHODOLOGY FOR LARGE-SCALE PARALLEL IMPLICIT COMPUTATIONS IN STRUCTURAL MECHANICS** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Crivelli, L., Roux, F. X.  
1994; 37 (11): 1945-1975
- **ON A COMPONENT MODE SYNTHESIS METHOD AND ITS APPLICATION TO INCOMPATIBLE SUBSTRUCTURES** *COMPUTERS & STRUCTURES*  
Farhat, C., Geradin, M.  
1994; 51 (5): 459-473
- **OPTIMAL CONVERGENCE PROPERTIES OF THE FETI DOMAIN DECOMPOSITION METHOD** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Mandel, J., Roux, F. X.  
1994; 115 (3-4): 365-385
- **A Sensitivity Analysis of ALE Fluid Flow Formulations for Coupled Transient Aeroelastic Computations** *USACM Bulletin*  
Farhat, C., Lesoinne, M.  
1994; 2 (1): 4-9
- **AN ENERGY-BASED OPTIMUM SENSOR PLACEMENT CRITERION AND ITS APPLICATION TO STRUCTURAL DAMAGE DETECTION** *12th International Modal Analysis Conference*  
Hemez, F. M., Farhat, C.  
SOC EXPERIMENTAL MECHANICS INC.1994: 1568–1575
- **COMPARING MODE SHAPE EXPANSION METHODS FOR TEST-ANALYSIS CORRELATION** *12th International Modal Analysis Conference*  
Hemez, F. M., Farhat, C.  
SOC EXPERIMENTAL MECHANICS INC.1994: 1560–1567
- **ADAPTION OF A FINITE ELEMENT SOLVER FOR THE ANALYSIS OF FLEXIBLE MECHANISMS TO PARALLEL PROCESSING SYSTEMS** *2nd International Conference on Computational Structures Technology*  
Coulon, D., Geradin, M., Farhat, C.  
CIVIL COMP PRESS.1994: 83–92
- **Unconditionally Stable Time-Integrators for Linear and Nonlinear Constrained Dynamics**  
Farhat, C., Crivelli, L., Gérardin, M.  
1994
- **Anti-stabilizing Effects of Bubble Functions**  
Franca, L., P., Farhat, C.  
1994
- **An Energy Based Optimum Sensor Placement Criterion and its Application to Structural Damage Detection**  
Farhat, C., Hemez, F.  
1994
- **Distributed Solution of Transient Coupled Aeroelastic Problems**  
Farhat, C., Lantéri, S., Maman, N.  
1994
- **Comparing Mode Shape Expansion Methods for Test-Analysis Correlation**  
Hemez, F., Farhat, C.

1994

- **Adaptation of a Finite Element Solver for the Analysis of Flexible Mechanisms to Parallel Processing Systems**  
Coulon, C., Gérardin, M., Farhat, C.  
1994
- **A Smoothing Procedure for the FETI Method: Application to Static and Dynamic Structural Analyses**  
Rixen, D., Farhat, C., Gérardin, M.  
1994
- **Current Reflections on Massively Parallel Processing in Computational Mechanics**  
Farhat, C.  
1994
- **Adaptation of a Finite Element Solver for the Analysis of Flexible Mechanisms to Parallel Processing Systems** *in: Advances in Parallel and Vector Processing for Structural Mechanics*  
Coulon, D., Gérardin, M., Farhat, C.  
edited by Topping, B., H.V., Papadrakakis, M.  
CIVIL-COMP PRESS.1994: 83-92
- **The Dual Schur Complement Method With Well-Posed Local Neumann Problems** *Contemporary Mathematics*  
Farhat, C., Roux, F., X.  
1994; 157: 193-201
- **Strategies for Parallelizing Navier-Stokes Solvers on MPP Machines** *Efficient Numerical Methods and Parallel Computing in Fluid Mechanics, University of Erlangen-Nurnberg, Germany*  
Farhat, C., Fézoui, L., Lantéri, S., Lorient, M.  
1994
- **Optimal Convergence Properties of the FETI Domain Decomposition Method** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Mandel, J., Roux, F., X.  
1994; 115: 367-388
- **On the Limitations of Bubble Functions** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Franca, L., P.  
1994; 117: 225-230
- **On a Component Mode Synthesis Method and its Application to Incompatible Substructures** *Computers & Structures*  
Farhat, C., Gérardin, M.  
1994; 51: 459-473
- **Finite Element Heterogeneous Algorithms for Transient Aeroelastic Computations** *Actes 3eme Congres National Belge de Mecanique Theorique et Appliquee, Liege, Belgium*  
Farhat, C.  
1994: 480-493
- **Extending Substructure Based Iterative Solvers to Multiple Load and Repeated Analyse** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Crivelli, L., Roux, F., X.  
1994; 117: 195-209
- **Tailoring Domain Decomposition Methods for Efficient Parallel Coarse Grid Solution and for Systems with Many Right Hand Sides** *Contemporary Mathematics*  
Farhat, C., Chen, P., S.  
1994; 180: 401-406
- **Simulation of Compressible Viscous Flows on a Variety of MPPs: Computational Algorithms for Unstructured Dynamic Meshes and Performance Results** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Lantéri, S.  
1994; 119: 35-60
- **Implicit Parallel Processing in Structural Mechanics** *Computational Mechanics Advances*

- Farhat, C., Roux, F., X.  
1994; 11 (1): 1-124
- **Fast Structural Design and Analysis Via Hybrid Domain Decomposition on Massively Parallel Processors** *Journal of Computing Systems in Engineering*  
Farhat, C.  
1994; 4 (4-6): 453-472
  - **An Interface Smoothing Procedure for the FETI Method: Application to Static and Dynamic Structural Analyses** *Actes 3eme Congres National Belge de Mecanique Theorique et Appliquee, Liege, Belgium*  
Rixen, D., Gérardin, M., Farhat, C.  
1994: 425-428
  - **A Transient FETI Methodology for Large-Scale Parallel Implicit Computations in Structural Mechanics** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Crivelli, L., Roux, F., X.  
1994; 37: 1945-1975
  - **UPDATING FINITE-ELEMENT DYNAMIC-MODELS USING AN ELEMENT-BY-ELEMENT SENSITIVITY METHODOLOGY** *AIAA JOURNAL*  
Farhat, C., Hemez, F. M.  
1993; 31 (9): 1702-1711
  - **MESH PARTITIONING ALGORITHMS FOR THE PARALLEL SOLUTION OF PARTIAL-DIFFERENTIAL EQUATIONS** *13TH WORLD CONGRESS OF THE INTERNATIONAL ASSOC FOR MATHEMATICS AND COMPUTERS IN SIMULATION : COMPUTATION AND APPLIED MATHEMATICS*  
Farhat, C., Lesoinne, M.  
ELSEVIER SCIENCE BV.1993: 443-57
  - **AUTOMATIC PARTITIONING OF UNSTRUCTURED MESHES FOR THE PARALLEL SOLUTION OF PROBLEMS IN COMPUTATIONAL MECHANICS** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Lesoinne, M.  
1993; 36 (5): 745-?
  - **A Natural Partitioning Scheme for Parallel Simulation of Multibody Systems** *International Journal for Numerical Methods in Engineering*  
Chiou, J., C., Park, K., C., Farhat, C.  
1993; 36: 945-967
  - **DAMAGE DETECTION IN A SUSPENDED SCALE-MODEL TRUSS VIA MODEL UPDATE** *11TH INTERNATIONAL MODAL ANALYSIS CONF ( IMAC - XI )*  
Doebbling, S. W., Hemez, F. M., Barlow, M. S., Peterson, L. D., Farhat, C.  
SPIE - INT SOC OPTICAL ENGINEERING.1993: 1083-1094
  - **2-DIMENSIONAL VISCOUS-FLOW COMPUTATIONS ON THE CONNECTION MACHINE - UNSTRUCTURED MESHES, UPWIND SCHEMES AND MASSIVELY PARALLEL COMPUTATIONS** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Fezoui, L., Lanteri, S.  
1993; 102 (1): 61-88
  - **VISCOUS-FLOW COMPUTATIONS ON MPP SYSTEMS - IMPLEMENTATIONAL ISSUES AND PERFORMANCE RESULTS FOR UNSTRUCTURED GRIDS** *6TH CONF ON PARALLEL PROCESSING FOR SCIENTIFIC COMPUTING*  
Lanteri, S., Farhat, C.  
SIAM.1993: 65-70
  - **Stability Analysis of Dynamic Meshes for Transient Aeroelastic Computations**  
Lesoinne, M., Farhat, C.  
1993
  - **Selection of Experimental Modal Data Sets for Damage Detection Via Model Update**  
Peterson, L., Doebbling, S., Hemez, F., Barlow, M., S., Farhat, C.  
1993
  - **On the Spectral Stability of Time Integration Algorithms for a Class of Constrained Dynamics Problems**  
Farhat, C., Crivelli, L., Gérardin, M.



1993

- **Locating and Identifying Structural Damage Using a Sensitivity-Based Model Updating Methodology**  
Hemez, F., Farhat, C.  
1993
- **Implicit Transient Finite Element Structural Computations on MIMD Systems: FETI v.s. Direct Solvers**  
Crivelli, L., Farhat, C.  
1993
- **Spectral Stability Theory for a Class of Domain Decomposition methods for Time Dependent Problems**  
Farhat, C.  
1993
- **Damage Detection in a Suspended Scale Model Truss via Model Update**  
Barlow, M., Doebling, S., Farhat, C., Hemez, F., Peterson, L.  
1993
- **Beware of the Effect of Rotational Degrees of Freedom on Theoretical Results in Domain Decomposition**  
Farhat, C., Roux, F., X.  
1993
- **Viscous Flow Computations on MPP Systems: Implementational Issues and Performance Results for Unstructured Grids** *Parallel Processing for Scientific Computing*  
Lantéri, S., Farhat, C.  
edited by Sincovec, R., F.  
SIAM.1993: 65–70
- **Updating Finite Element Dynamic Models Using an Element-by-Element Sensitivity Methodology** *AIAA Journal*  
Farhat, C., Hemez, F.  
1993; 31 (9): 1702-1711
- **Two-Dimensional Viscous Flow Computations on the Connection Machine: Unstructured Meshes, Upwind Schemes, and Massively Parallel Computations** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Fézoui, L., Lantéri, S.  
1993; 102 (1): 61-88
- **The Dual Schur Complement Method With Well-Posed Local Neumann Problems: Regularization with a Perturbed Lagrangian Formulation** *SIAM Journal on Scientific and Statistical Computing*  
Farhat, C., Chen, P., S., Roux, F., X.  
1993; 14 (3): 752-759
- **Etude Theorique et Experimentale de la Correlation entre Modeles Elements Finis et Tests Modaux pour de Grandes et Flexibles Structures Spatiales** *Colloque National en Calcul des Structures, Giens, France*  
Farhat, C., Hemez, F.  
1993: 480-493
- **A Structure Attached Corotational Fluid Grid For Transient Aeroelastic Computations** *AIAA Journal*  
Farhat, C., Lin, T., Y.  
1993; 31 (3): 597-599
- **USING A REDUCED NUMBER OF LAGRANGE MULTIPLIERS FOR ASSEMBLING PARALLEL INCOMPLETE FIELD FINITE-ELEMENT APPROXIMATIONS** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Geradin, M.  
1992; 97 (3): 333-354
- **An Unconventional Domain Decomposition Method for an Efficient Parallel Solution of Large-Scale Finite Element Systems** *SIAM Journal on Scientific and Statistical Computing*  
Farhat, C., Roux, F., X.  
1992; 13 (1): 379-396

- **AN UNCONVENTIONAL DOMAIN DECOMPOSITION METHOD FOR AN EFFICIENT PARALLEL SOLUTION OF LARGE-SCALE FINITE-ELEMENT SYSTEMS** *SIAM JOURNAL ON SCIENTIFIC AND STATISTICAL COMPUTING*  
Farhat, C., Roux, F. X.  
1992; 13 (1): 379-396
- **A Hybrid Formulation of a Component Mode Synthesis Method**  
Farhat, C., Gérardin, M.  
1992
- **Unstructured CFD Computations on The KSR-1: preliminary results**  
Lantéri, S., Farhat, C.  
1992
- **Stabilizing a Saddle-Point Domain Decomposition Method with an Augmented Lagrangian Formulation**  
Farhat, C., Roux, F., X.  
1992
- **Regularization of the Method of Finite Element Tearing and Interconnecting**  
Farhat, C., Chen, P., S.  
1992
- **Performance Comparison of Structural Explicit Codes on the iPSC/860 and the CM-2**  
Pramono, E., Farhat, C.  
1992
- **Iterative Solution of Eigenvalue Problems in Structural Dynamics Via Domain Decomposition**  
Farhat, C.  
1992
- **Initially Deformed Truss Geometries for Improving the Adaptive Performance of Truss Structures**  
Mikulas, M., M., Wada, B., K., Farhat, C.  
1992
- **Analysis and Design of Aerospace Structures on Massively Parallel Architectures: the Method of Finite Element Tearing and Interconnecting**  
Farhat, C., Crivelli, L.  
1992
- **A Hybrid Substructuring Method and an Adaptive Refinement Scheme For the Distributed Solution of Three-Dimensional Structural Problems**  
Farhat, C., Felippa, C., Militello, M.  
1992
- **A Finite Element Model Updating Methodology and its Application to Structural Damage Detection**  
Hemez, F., Farhat, C.  
1992
- **Domain Decomposition and Parallel Processing** *Postgraduate Studies in Supercomputing*  
Farhat, C.  
edited by FNRS/NFWO, U., Liege, B. d.  
1992: 1
- **Parallel Processing in Structural Mechanics: Blending Mathematical, Implementational, and Technological Advances** *Computing Methods in Applied Sciences and Engineering*  
Farhat, C.  
edited by Glowinski, R.  
Nova Science Publishers, Inc. New York.1992: 89–106
- **Mixed Finite Volume/Finite Element Massively Parallel Computations: Euler Flows, Unstructured Grids, and Upwind Approximations** *Unstructured Scientific Computation on Scalable Multiprocessors*  
Farhat, C., Lantéri, S., Fézoui, L.  
edited by Mehrotra, P., Saltz, J., Voigt, R.

MIT Press.1992: 253–283

- **Using a Reduced Number of Lagrange Multipliers for Assembling Parallel Incomplete Field Finite Element Approximations** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., G radin, M.  
1992; 97: 333-354
- **PARALLEL VECTOR IMPROVEMENTS OF THE FRONTAL METHOD** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Lesoinne, M., Farhat, C., Geradin, M.  
1991; 32 (6): 1267-1281
- **A METHOD OF FINITE-ELEMENT TEARING AND INTERCONNECTING AND ITS PARALLEL SOLUTION ALGORITHM** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
Farhat, C., Roux, F. X.  
1991; 32 (6): 1205-1227
- **A Method of Finite Element Tearing and Interconnecting and its Parallel Solution Algorithm** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Roux, F., X.  
1991; 32: 1205-1227
- **A Natural Partitioning Scheme for Parallel Simulation of Multibody Systems**  
Chiou, J., C., Park, K., C., Farhat, C.  
1991
- **Large-Scale CFD and CSM Simulations on Both Extreme Parallel Architectures: Finite Element Algorithms, Implementation Methodologies, and Performance Results**  
Farhat, C.  
1991
- **Automatic Partitioning of Finite Element/Finite Difference Meshes For Parallel Processing**  
Farhat, C.  
1991
- **Finite Element Analysis on Concurrent Machines** *Parallel Processing in Computational Mechanics*,  
Farhat, C.  
edited by Adeli, H., Dekker, M.  
Inc., New York.1991: 183–218
- **An Introduction to Parallel Scientific Computations** *Postgraduate Studies in Supercomputing*  
Farhat, C.  
edited by FNRS/NFWO, U., Liege, B. d.  
1991: 1
- **A Lagrange Multiplier Based Divide and Conquer Finite Element Algorithm** *in: Parallel Methods on Large-Scale Structural Analysis and Physics Applications*  
Farhat, C.  
edited by Storaasli, O., Carmona, E.  
1991: 149–156
- **Parallel/Vector Improvements of the Frontal Method** *International Journal for Numerical Methods in Engineering*  
Lesoinne, M., Farhat, C., G radin, M.  
1991; 32: 1267-1282
- **An Unconditionally Stable Staggered Algorithm for Transient Finite Element Analysis of Coupled Thermoelastic Problems** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Park, K., C., Pelerin, Y., D.  
1991; 85: 349-365
- **A Modular Multibody Analysis Capability for High Precision, Active Control and Real-Time Applications** *International Journal for Numerical Methods in Engineering*

- 
- Park, K., C., Downer, J., D., Chiou, J., C., Farhat, C.  
1991; 32 (8): 1767-1798
- **A Lagrange Multiplier Based Divide and Conquer Finite Element Algorithm** *Journal of Computing Systems in Engineering*  
Farhat, C.  
1991; 2 (2/3): 149-156
  - **A Consistency Analysis of a Class of Concurrent Transient Implicit/Explicit Algorithms** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Sobh, N.  
1990; 84: 147-162
  - **Transient Aeroelastic Computations Using Multiple Moving Frames of Reference**  
Farhat, C., Lin, T., Y.  
1990
  - **Moving Finite Element Applications to Multiprocessors: From Theory to Practice**  
Farhat, C.  
1990
  - **An Unconventional Domain Decomposition Method for an Efficient Parallel Solution of Large-Scale Finite Element Systems**  
Farhat, C., Roux, F.  
1990
  - **Solving and Visualizing Finite Element Problems on the Connection Machine** *Parallel Processing in Engineering Applications, Computational Mechanics Publications*  
Farhat, C., Pramono, E.  
edited by Adey, R., A.  
Springer-Verlag.1990: 95-108
  - **Which Parallel Finite Element Algorithm for Which Architecture and Which Problem** *Engineering Computations*  
Farhat, C.  
1990; 7 (3): 185-195
  - **Transient Finite Element Computations on 65,536 Processors: The Connection Machine** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Sobh, N., Park, K., C.  
1990; 30: 27-55
  - **Solving Navier-Stokes Equations on a Massively Parallel Processor: Beyond the One Gigaflop Performance** *International Journal of Supercomputer Applications*  
Saati, A., Biringen, S., Farhat, C.  
1990; 4 (1): 72-80
  - **Redesigning the Skyline Solver for Parallel/Vector Supercomputers** *International Journal of High Speed Computing*  
Farhat, C.  
1990; 2 (3): 223-238
  - **Dynamics of Three-Dimensional Space Crane: Motion Requirements and Computational Considerations** *ASME Paper No. 90-WA/Aero-7, Dallas Texas*  
Park, K., C., Chiou, J., C., Downer, J., D., Farhat, C., Chen, G., S., Wada, B., K.  
1990
  - **A GENERAL-APPROACH TO NONLINEAR FE COMPUTATIONS ON SHARED-MEMORY MULTIPROCESSORS** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Farhat, C., Crivelli, L.  
1989; 72 (2): 153-171
  - **A General Approach to Nonlinear FE Computations on Shared Memory Multiprocessors** *Computer Methods in Applied Mechanics and Engineering*  
Farhat, C., Crivelli, L.  
1989; 72 (2): 153-172
  - **Towards Parallel I/O in Finite Element Simulations**  
Farhat, C., Pramono, E., Felippa, C.

1989

- **Parallel Computational Strategies for Large Space and Aerospace Flexible Structures: Algorithms, Implementations and Performance** *Supercomputing in Engineering Structures*  
Farhat, C.  
edited by Melli, P., Brebbia, C.  
Springer-Verlag.1989: 109–133
- **Transient Aeroelastic Computations Using Multiple Moving Frames of Reference** *AIAA Paper 90-3053, AIAA 8th Applied Aerodynamics Conference*  
Farhat, C.  
edited by Grandhi, R., V., Stroud, W., J., Venkayya, V., B.  
ASME.1989: 35–43
- **Computational Strategies for FE Simulations on Supercomputers with 4 to 65,536 Processors** *Computer Utilization in Structural Engineering*  
Farhat, C.  
edited by Nelson, J., K.  
1989: 178–186
- **On the Mapping of Massively Parallel Processors Onto Finite Element Graphs** *Computers & Structures*  
Farhat, C.  
1989; 32 (2): 347-354
- **Dynamic Finite Element Simulations on the Connection Machine** *International Journal of High Speed Computing*  
Farhat, C., Sobh, N., Park, K., C.  
1989; 1 (2): 289-302
- **A Coarse/Fine Preconditioner for Very Ill-Conditioned Finite Element Problems** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Sobh, N.  
1989; 28 (7): 1715-1723
- **A Parallel Active Column Equation Solver** *Computers & Structures*  
Farhat, C., Wilson, E.  
1988; 28 (2): 289-304
- **The Force for Efficient Multitasking on the CRAY Series of Supermultiprocessors**  
Benten, M., Farhat, C., Jordan, H.  
1988
- **Dynamic Finite Element Simulations on the Connection Machine**  
Farhat, C., Sobh, N., Park, K., C.  
1988
- **Large Scale FE Parallel Nonlinear Computations Using a Homotopy Method** *Parallel Processing for Scientific Computing*  
Farhat, C., Crivelli, L.  
edited by Rodrigue, G.  
SIAM.1988: 265–269
- **Linear and Nonlinear Finite Element Analyses on Multiprocessor Computer Systems** *Communications in Applied Numerical Methods*  
Wilson, E., Farhat, C.  
1988; 4 (3): 425-434
- **A Simple and Efficient Automatic FEM Domain Decompose** *Computers & Structures*  
Farhat, C.  
1988; 28 (5): 579-602
- **A New Finite Element Concurrent Computer Program Architecture** *International Journal for Numerical Methods in Engineering*  
Farhat, C., Wilson, E.  
1987; 24 (9): 1771-1792
- **Implementation Aspects of Concurrent Finite Element Computations** *Parallel Computations and their Impact on Mechanics*

Farhat, C., Felippa, C., Park, K., C.  
edited by Noor, A., K.  
ASME.1987: 301–316

- **Concurrent Iterative Solution of Large Finite Element Systems** *Communications in Applied Numerical Methods*

Farhat, C., Wilson, E.  
1987; 3 (4): 319-326

- **Solution of Finite Element Systems on Concurrent Processing Computers** *Engineering With Computers*

Farhat, C., Wilson, E., Powell, G.  
1987; 2 (3): 157-165

- **Modal Superposition Analysis on Concurrent Multiprocessors** *Engineering Computations*

Farhat, C., Wilson, E.  
1986; 3 (4): 305-311

- **Scelernomic Analysis of Structures Considering Connection Slip** *Finite Element in Analysis and Design*

Melosh, R., Araya, R., Farhat, C., Garcelon, J., Mora, J., Seifert, P.  
1986; 2: 241-247