



Professor Charbel Farhat

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Vivian Church Hoff Professor of Aircraft Structures
Chair, Department of Aeronautics and Astronautics
Director, Army High-Performance Computing Research Center
Stanford University

Biosketch:

Charbel Farhat is the Vivian Church Hoff Professor of Aircraft Structures and the Chairman of the Department of Aeronautics and Astronautics at Stanford University. He is also Professor of Mechanical Engineering,

Professor in the Institute for Computational and Mathematical Engineering, and Director of the Army High Performance Computing Research Center . He currently serves on the United States Bureau of Industry and Security's Emerging Technology and Research Advisory Committee (ETRAC) at the United States Department of Commerce, and on the technical assessment boards of several national research councils and foundations.

Professor Farhat is designated as an ISI Highly Cited Author in Engineering by the Institute for Science Information (ISI) Web of Knowledge, Thomson Scientific Company (ISIHighlyCited.com). He was knighted by the Prime Minister of France in the Order of Academic Palms (2011) and awarded the Medal of Chevalier dans l'Ordre des Palmes Academiques. He is also the recipient of several other academic distinctions including the Lifetime Achievement Award (2011) from the American Society of Mechanical Engineers (ASME)'s Computers & Information in Engineering Division, the Structures, Structural Dynamics and Materials Award (2010) from the American Institute of Aeronautics and Astronautics (AIAA), the John von Neumann Medal (2009), Computational and Applied Sciences Award (2001), and R. H. Gallagher Special Achievement Award (1997) from the United States Association of Computational Mechanics (USACM), the Gordon Bell Prize (2002) and Sidney Fernbach Award (1997) from the Institute of Electrical and Electronics Engineers (IEEE) Computer Society, the Computational Mechanics Award (2002) and Computational Mechanics Award for Young Investigators (1998) from the International Association of Computational Mechanics (IACM), the Modeling and Simulation Award (2001) from the Department of Defense, the IBM Sup'Prize Achievement Award (1995), the CRAY Research Award (1990), and the United States Presidential Young Investigator Award (1989) from the National Science Foundation and the White House. He has over 25 years of research experience in structural mechanics, structural dynamics, fluid-structure interaction, CFD on moving grids, computational acoustics, numerical analysis, model reduction, and parallel processing.

Professor Farhat is Editor of the International Journal for Numerical Methods in Engineering, and Editor of the International Journal for Numerical Methods in Fluids. He also serves on the editorial boards of nine other international scientific journals. He is a Fellow of the Society of Industrial and Applied Mathematics (2011), Fellow of the American Society of Mechanical Engineers (2003), Fellow of the International Association of Computational Mechanics (2002), Fellow of the World Innovation Foundation (2001), Fellow of the United States Association of Computational Mechanics (2001), and Fellow of the American Institute of Aeronautics and Astronautics (1999).

Research Statement:

Professor Farhat and his research group 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 focus in research is on the aerodynamics of Micro Aerial Vehicles (MAVs) and Formula 1 cars, ballistic fabric for lightweight shields, nonlinear aeroelasticity of fighter jets and High-Altitude Long Endurance (HALE) aircraft, thermal management of hypersonic vehicles, underwater acoustics and imaging, and underwater implosion. Current theoretical and computational emphases in research are on high-performance, multi-scale modeling for the high-fidelity analysis of multi-physics problems, and efficient reduced-order modeling for time-critical applications such as design and active control.

Education:

1987 PhD University of California, Berkeley

Academic Honors & Awards:

Knighthood by the Prime Minister of France in the Order of Academic Palms (Chevalier dans l'Ordre des Palmes Academiques, 2011)
Lifetime Achievement Award, The American Society of Mechanical Engineers (2011)
Fellow of the Society of Industrial and Applied Mathematics (SIAM, 2011)
Structures, Structural Dynamics and Materials Award (AIAA, 2010)
John von Neumann Medal (USACM, 2009)
Highly Cited Researcher in Engineering (ISI, 2009)
Co-author paper winner of Robert J. Melosh Medal (2008)
Fellow of the American Society of Mechanical Engineers (ASME, 2003)
The Subaru Educator Spotlight (Subaru, 2003)
The Gordon Bell Award (IEEE, 2002)
The Computational Mechanics Award (IACM, 2002)
Fellow of the International Association of Computational Mechanics (IACM, 2002)
Co-author paper winner of Robert J. Melosh Medal (2002)
Fellow of the World Innovation Foundation (WIF, 2001)
Engineer of the Year (AIAA Rocky Mountain Section, 2001)
The 2001 Modeling and Simulation Award (Department of Defense, 2001)
The Computational and Applied Sciences Medal (USACM, 2001)
Fellow of the US Association of Computational Mechanics (USACM, 2001)
Fellow of the American Institute of Aeronautics and Astronautics (AIAA, 1999)
The 1998 International Association of Computational Mechanics Young Investigator Award (IACM, 1998)
The R. H. Gallagher Special Achievement Award for Young Investigators (USACM, 1997)
The Sidney Fernbach Award (IEEE, 1997)
The College of Engineering and Applied Sciences Research Award (University of Colorado, 1996)
The Sup'Prize Achievement Award (IBM, 1995)
The ASME Aerospace Structures and Materials Best Paper Award (ASME, 1994)
The Arch T. Colwell Merit Award (SAE, 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 Foundation, 1989)
Presidential Young Investigator Award (National Science Foundation, 1989)
AGARD Lecturer (1988, 1991, 1993, 1995)
PACER Fellowship (Control Data Corporation, 1987--1989)

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