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PROFESSIONAL CREDENTIALS

Massachusetts Institute of Technology	Aeronautics & Astronautics	B.S., 1991
Princeton University	Mechanical & Aerospace Engineering	M.A., 1993
Princeton University	Mechanical & Aerospace Engineering	Ph.D., 1997

ACADEMIC / PROFESSIONAL APPOINTMENTS
2004-present, Stanford University, Associate Professor
2006-2008, NASA Headquarters, Director, NASA Fundamental Aeronautics Program
1997-2004, Stanford University, Assistant Professor
1996-98, McDonnell Douglas Corporation, Aerodynamic Designer

AWARDS

2010 Altitude World Record, Class U, Unmanned Aerial Vehicles, Electric. Team member
2009 NASA Exceptional Public Service Medal
2006 F.W. Baldwin Award for best paper published in the Canadian Aero & Space Journal
2004, 2006, 2008 AIAA Best Paper Award, Multi-Disciplinary Optimization Conferences
AIAA Stanford Chapter Professor of the Year (6-time recipient during the 1998-2011 period)
2003 Balhaus prize – Advisor for best doctoral thesis in Aeronautics & Astronautics
1998-99 Terman Fellow
1996 Ray Grimm Memorial Price in Computational Physics
1995-96 Princeton University Honorific Fellow
1992 Speed World Record, Human-Powered Vehicle Over Water. Team member
1990 Admiral Luis de Florez Award in Mechanical Engineering Design

COMMITTEE/ADVISORY COUNCIL MEMBERSHIP

2011-present, FAA Administrator's Management Advisory Council
2010-present, Secretary of Transportation's Future of Aviation Advisory Council
2006-present, FAA REDAC, Office of Energy and Environment
2005-present, Center for Turbulence Research Steering Committee
2007-present, Stanford PSAAP Center Steering Committee
2009-2010, ICAO/CAEP Independent Expert Group for Aircraft Fuel Burn Goals/Regulations
2005-07, NASA Advisory Council (Aeronautics Committee)
2006-08, VAATE Steering Committee
2006-08, Fixed-Wing Vehicle Council Member
2004-06, AIAA Multi-Disciplinary Optimization Technical Committee

PROFESSIONAL ACTIVITIES AND INTERESTS: LONG VERSION

Juan J. Alonso is an associate professor in the Department of Aeronautics & Astronautics at Stanford University. He joined the faculty in 1997 shortly after receiving a PhD degree in Mechanical and Aerospace Engineering from Princeton University. He is the founder and director

of the Aerospace Design Laboratory (ADL) where he specializes in the development of high-fidelity computational design methodologies to enable the creation of realizable and efficient aerospace systems. Prof. Alonso's research involves a large number of different applications including transonic, supersonic, and hypersonic aircraft, helicopters, turbomachinery, and launch and re-entry vehicles. Prof. Alonso was one of the main PIs of the Stanford University ASC Center for Integrated Turbulence Simulations (CITS) sponsored by the Department of Energy to create the computational solution methodologies to solve the flow through entire jet engines. He is the author of over 100 technical publications on the topics of computational aircraft and spacecraft design, multi-disciplinary optimization, fundamental numerical methods, and high-performance parallel computing. During the period spanning August 2006-October 2008, Prof. Alonso was the Director of the NASA Fundamental Aeronautics Program in Washington, DC (~1,500 civil servants and contractors and an annual budget of approximately $500M.) In that position he was responsible for the entire portfolio of aerospace vehicle and vehicle technology research for the agency in the subsonic rotary wing, subsonic fixed wing, supersonic, and hypersonic regimes, with particular emphasis on the energy and fuel efficiency and sufficiency of the aviation enterprise and its environmental impact. As Director of the Fundamental Aeronautics Program, he also oversaw a large number of interactions with academia, industry, and other government agencies including the FAA, the Department of Defense (USAF, Army, Navy), Department of Energy, DARPA, and the JPDO. He is also the recipient of several awards and fellowships including being a three-consecutive-time recipient of the AIAA Best Paper Award in Multi-Disciplinary Optimization, the NASA 2009 Exceptional Public Service Medal, the Stanford Chapter AIAA Professor of the Year Award, the Ray Grimm Memorial Prize in Computational Physics, and the Terman and Princeton University Honorific fellowships. Prof. Alonso is deeply interested in the development of an advanced curriculum for the training of future engineers and scientists and has participated actively in the curriculum committee for the Institute for Computational and Mathematical Engineering (ICME) at Stanford University. He holds a Bachelor of Science in Aeronautics & Astronautics from the Massachusetts Institute of Technology (MIT 1991) where he was a member of the team that currently holds the world speed record for human powered vehicles over water. Prof. Alonso serves in the AIAA Multidisciplinary Optimization Technical Committee, the CGNS Steering Committee and the Center for Turbulence Research Steering Committee and he is a reviewer for a number of archival journals. He has also served in the NASA Advisory Council (Aeronautics Committee), the VAATE Steering Committee, the Fixed Wing Vehicle Executive Council, and the FAA Office of Environment & Energy REDAC. More recently (2010), Prof. Alonso was a member of the Secretary of Transportation's Future of Aviation Advisory Council and in December 2010 he was appointed to the FAA Administrator's Management Advisory Council for a term of 3 years. In the past, his research work has been funded by DARPA, AFOSR, the Department of Energy, NASA, Boeing, and Raytheon Aircraft among others.

SELECTED PUBLICATIONS

Alonso, J. J. and Colonno, M., Multidisciplinary Optimization with Applications to Sonic Boom Minimization, Annual Reviews of Fluid Mechanics, August 2011 (in print).

Duraisamy, K., Alonso, J. J., Chandrasekar, P., Palacios, F., "Error Estimation for High Speed Flows Using Continuous and Discrete Adjoints," AIAA Paper 2010-0128, 48th AIAA Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition, Orlando, Florida, Jan. 4-7, 2010

Choi, S., Alonso, J. J., Kroo, I., "Two-Level Multifidelity Design Optimization Studies for Supersonic Jets," AIAA Journal of Aircraft 2009, vol.46 no.3 (776-790), doi: 10.2514/1.34362

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Alonso, J. J., LeGresley, P., Pereyra, V., "Aircraft Design Optimization," Mathematics and Computers in Simulation, Vol. 79, Issue 2, 2009, Pages 1948-1958

Marta, A. C., Alonso, J. J., "Toward Optimally Seeded Airflow on Hypersonic Vehicles Using Control Theory," Computers & Fluids, vol. 39, issue 9, 2010.

Choi, S., Potsdam, M., Lee, K., Iaccarino, G., and Alonso, J. J.,"Helicopter Rotor Design Using a Time-Spectral and Adjoint-Based Method," AIAA Paper 2008-5810, 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, September, 2008.

Mader, C., Martins, J., Alonso, J. J., and van der Weide, E., "ADjoint: An Approach for the Rapid Development of Discrete Adjoint Solvers," AIAA Journal, vol. 46, no. 4, pp. 863-873, April 2008.

Choi, S., Alonso, J. J., Kroo, I. M., and Wintzer, M., "Multifidelity Design Optimization of Low-Boom Supersonic Jets," AIAA Journal, vol. 45, no. 1, pp. 106-118, January-February 2008.

Colonno, M., Reddy, S., and Alonso, J. J., "Multi-Fidelity Trajectory Optimization with Response Surface Based Aerodynamic Performance Prediction," AIAA Paper 2008-0218, 46th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2008.

A. C. Marta, C. A. Mader, J. R. R. A. Martins, E. van der Weide, and J. J. Alonso. A methodology for the development of discrete adjoint solvers using automatic differentiation tools. International Journal of Computational Fluid Dynamics, 21(9):307–327, 2007.

Medic, G., Kalitzin, G., You, D., van der Weide, E., Alonso, J. J., and Pitsch, H., "Integrated RANS/LES Computations of an Entire Gas Turbine Jet Engine," AIAA Paper 2007-1117, 45th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2007.

Kalitzin, G., Medic, G., van der Weide, E., and Alonso, J. J., "Interaction of Turbomachinery Components in Large-Scale Unsteady Computations of Jet Engines," AIAA Paper 2007-0519, 45th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2007.

Gopinath, A., van der Weide, E., Alonso, J. J., Jameson, A., Ekici, V., and Hall, K., "Three-Dimensional Unsteady Multi-Stage Turbomachinery Simulations Using the Harmonic Balance Technique," AIAA Paper 2007-0892, 45th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2007.

Alonso, J. J., Hahn, S., Ham, F., Herrmann, M., Iaccarino, G. and van der Weide, E., "CHIMPS: A High- Performance Scalable Module for Multi-Physics Simulations," AIAA Paper 2006-5274, 42nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Sacramento, CA, July 2006.

J. J. Alonso, S. Hahn, F. Ham, M. Herrmann, G. Iaccarino. G. Kalitzin, P. LeGresley, K. Mattsson, G. Medic, P. Moin, H. Pitsch, J. Schluter, M. Svard, E. Van der Weide, D. You, X.

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J. Schlüter, S. Apte, G. Kalitzin, E. v. d. Weide, J. J. Alonso, and H. Pitsch, Unsteady CFD Simulation of an Entire Gas Turbine High-Spool, *GT-2006-90090,* ASME Turbo Expo 2006 Land, Sea, Air, May 2006.

Marta, A. C., Alonso, J. J., Discrete Adjoint Formulation for the Ideal MHD Equations, 3rd AIAA Flow Control Conference, AIAA Paper 2006-3345, San Francisco, CA, June 2006.

Nadarajah, S; Jameson, A, and Alonso, J J, An adjoint method for the calculation of remote sensitivities in supersonic flow. *Int. Journal of Computational Fluid Dynamics*. Vol. 20, No. 2, pp 61-74, Feb. 2006.

van der Weide, E., Kalitzin, G., Schluter, J., Alonso, J.J., Unsteady Turbomachinery Computations Using Massively Parallel Platforms, 44th AIAA Aerospace Sciences Meeting and Exhibit, AIAA Paper 2006-0421, Reno, NV, January 2006.

J. Schlüter, X. Wu, E. van der Weide, S. Hahn, J. Alonso, and H. Pitsch, Integrated LES-RANS of an Entire High-Spool of a Gas Turbine, *AIAA-2006-0897*, 44th Aerospace Sciences Meeting and Exhibit Conference, January 2006.

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J. Schlüter, X. Wu, S. Kim, J. Alonso, and H. Pitsch, Integrated Simulations of a Compressor/Combustor Assembly of a Gas Turbine Engine, *ASME GT-2005-68204*, ASME Turbo Expo 2005 Land, Sea and Air, June 2005.

J. U. Schlüter, X. Wu, E. van der Weide, S. Hahn, J. J. Alonso, and H. Pitsch, Multi-Code Simulations: A Generalized Coupling Approach, *AIAA-2005-4997,* 17th AIAA CFD Conference, June 2005.

J. R. R. A. Martins, J. J. Alonso, and J. J. Reuther. A Coupled-Adjoint Sensitivity Analysis Method for High-Fidelity Aero-Structural Design. Optimization and Engineering, 6(1):33–62, March 2005.

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J. J. Alonso, P. LeGresley, E. van der Weide, J. R. R. A. Martins, and J. J. Reuther. pyMDO: A Framework for High-Fidelity Multi-Disciplinary Optimization. In Proceedings of the 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, 2004. AIAA 2004-4480.

J. U. Schlüter, X. Wu, S. Kim, J. J. Alonso, and H. Pitsch, Progress in Coupled LES-RANS Computations of Gas Turbines, 5th International ASME/JSME Symposium on Computational Technology for Fluid/Thermal/Chemical/Stressed Systems with Industrial Applications. July 2004.

J. U. Schlüter, X. Wu, S. Kim, J. J. Alonso, and H. Pitsch, Coupled RANS-LES Computation of a Compressor and Combustor in a Gas Turbine Engine, AIAA-2004-3417, 40th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, July 2004.

S. Kim, J. U. Schlüter, X. Wu, J. J. Alonso, and H. Pitsch, Integrated Simulations for Multi-Component Analysis of Gas Turbines: RANS Boundary Conditions, AIAA-2004-3415, 40th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, July 2004.

J. U. Schlüter, X. Wu, S. Kim, J. J. Alonso, and H. Pitsch, Integrated RANS-LES Computations in Gas Turbines: Compressor-Diffuser, AIAA-2004-0369, 42nd Aerospace Sciences Meeting and Exhibit Conference, January 2004.

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J. Schlüter, H. Pitsch, P. Moin, S. Shankaran, S. Kim and J. Alonso, Towards Multi-Component Analysis of Gas Turbines with CFD: Integration of RANS and LES Flow Solvers, ASME GT-2003-38350, ASME Turbo Expo 2003 Land, Sea and Air, June 2003.

J. Schlüter, S. Shankaran, S. Kim, H. Pitsch, P. Moin, and J. Alonso, Integration of RANS and LES Flow Solvers for Simultaneous Flow Computations, AIAA-2003-0085, 41st Aerospace Sciences Meeting and Exhibit Conference, January 2003.

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Reuther, J.J., Alonso, J.J., Jameson, A., Rimlinger, M.J., Saunders, D., "Constrained Multipoint Aerodynamic Shape Optimization Using an Adjoint Formulation and Parallel Computers: Parts I and II," AIAA Journal of Aircraft, vol. 36, no. 1, pp. 51-74, January-February 1999.

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Pierce, N.A., Alonso, J.J., "Efficient Computation of Unsteady Viscous Flows by an Implicit Preconditioned Multigrid Method," <u>AIAA Journal</u>, vol. 36, no. 3, pp. 401-408, March 1998.