

List of Publications (Not Complete Yet)

Juan J. Alonso

October 2012

Books, Chapters, Contributions

To be included soon.

Recent Refereed Journal Publications

1. J. J. Alonso and M. R. Colonno. Multidisciplinary optimization with applications to sonic-boom minimization. *Annual Review of Fluid Mechanics*, 44(1):505–526, 2012
2. F. Palacios, K. Duraisamy, J. J. Alonso, and E. Zuazua. Robust grid adaptation for efficient uncertainty quantification. *AIAA Journal*, 50(7):1538–1546, 2012
3. Q. Wang, K. Duraisamy, J. J. Alonso, and G. Iaccarino. Risk assessment of scramjet unstart using adjoint-based sampling methods. *AIAA Journal*, 50(3):581–592, 2012
4. Z De Vito, N. Joubert, F. Palacios, S. Oakley, M. Medina, M. Barrientos, E. Elsen, F. Ham, A. Aiken, K. Duraisamy, E. Darve, J. J. Alonso, and P. Hanrahan. Liszt: A domain specific language for building portable mesh-based PDE solvers. In *In Proceedings of the 2011 ACM/IEEE Conference on Supercomputing (SC11)*, Seattle, WA, USA, November 2011
5. S. Choi, A. Datta, and J. J. Alonso. Prediction of helicopter rotor loads using time-spectral computational fluid dynamics and an exact fluid-structure interface. *Journal of the American Helicopter Society*, 56(4):1–15, 2011

6. K. Palaniappan, P. Sahu, A. Jameson, and J. J. Alonso. Design of adjoint-based laws for wing flutter control. *AIAA Journal of Aircraft*, 48(1):331–335, 2011
7. A. Marta and J. J. Alonso. Towards optimally seeded airflow on hypersonic vehicles using control theory. *Computers & Fluids*, 39(9):1562–1574, 2010
8. S. Choi, J. J. Alonso, and E. van der Weide. Numerical and mesh resolution requirements for accurate sonic boom prediction. *AIAA Journal of Aircraft*, 46(4):1126–1139, 2009
9. S. Choi, J. J. Alonso, and I. Kroo. Two-level multifidelity design optimization studies for supersonic jets. *AIAA Journal*, 46(3):776–790, 2009
10. J. J. Alonso, P. LeGresley, and V. Pereyra. Aircraft design optimization. *Mathematics and Computers in Simulation*, 79(6):1948–1958, 2009
11. S. Choi, J. J. Alonso, I. Kroo, and M. Wintzer. Multifidelity design optimization of low-boom supersonic jets. *AIAA Journal of Aircraft*, 45(5):1082–1097, 2009
12. C. Mader, J. R. R. A. Martins, J. J. Alonso, and E. van der Weide. Adjoint: An approach for the rapid development of discrete adjoint solvers. *AIAA Journal*, 46(4):863–873, 2008
13. 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(9-10):307–327, 2007
14. M. McMullen, A. Jameson, and J. J. Alonso. Demonstration of nonlinear frequency domain methods. *AIAA Journal*, 44(7):1428–1435, 2006
15. R. Davis, J. J. Alonso, J. Yao, R. Paolillo, and O. Sharma. Prediction of main/secondary-air system flow interaction in a high-pressure turbine. *AIAA Journal of Propulsion and Power*, 21(1):158–166, 2005
16. Joaquim R. R. A. Martins, Juan J. Alonso, and James J. Reuther. A coupled-adjoint sensitivity analysis method for high-fidelity aero-

structural design. *Optimization and Engineering*, 6(1):33–62, March 2005

17. S. Kim, J. J. Alonso, and A. Jameson. Multi-element high-lift configuration design optimization using viscous continuous adjoint method. *AIAA Journal of Aircraft*, 41(5):1082–1097, 2005
18. J. R. R. A. Martins, J. J. Alonso, and J. J. Reuther. High-fidelity aero-structural design optimization of a supersonic business jet. *AIAA Journal of Aircraft*, 41(3):523–530, 2004
19. J. R. R. A. Martins, P. Sturdza, and J. J. Alonso. The complex-step derivative approximation. *ACM Trans. Math. Softw.*, 29(3):245–262, September 2003
20. J. Yao, R. Davis, J. J. Alonso, and A. Jameson. Massively parallel simulation of the unsteady flow in an axial turbine stage. *AIAA Journal of Propulsion and Power*, 18(2):465–471, 2002
21. J. Yao, A. Jameson, J. J. Alonso, and F. Liu. Development and validation of a massively parallel flow solver for turbomachinery flows. *AIAA Journal of Propulsion and Power*, 17(3):659–668, 2001
22. J. J. Reuther, A. Jameson, J. J. Alonso, M. J. Rimlinger, and D. Saunders. Constrained multipoint aerodynamic shape optimization using an adjoint formulation and parallel computers, part 1. *AIAA Journal of Aircraft*, 36(1):51–60, 1999
23. J. J. Reuther, A. Jameson, J. J. Alonso, M. J. Rimlinger, and D. Saunders. Constrained multipoint aerodynamic shape optimization using an adjoint formulation and parallel computers, part 2. *AIAA Journal of Aircraft*, 36(1):61–74, 1999
24. N. A. Pierce and J. J. Alonso. Efficient computation of unsteady viscous flows by an implicit preconditioned multigrid method. *AIAA Journal*, 36(3):401–408, 1998

1 Conference Proceedings

1. F. Palacios, J. J. Alonso, and A. Jameson. Shape sensitivity of free-surface interfaces using a level set methodology. *AIAA paper 2012-3341*, 42nd AIAA Fluid Dynamics Conference and Exhibit, New Orleans, LA, June 2012

2. M. R. Colonna and J. J. Alonso. Sonic boom minimization revisited: The robustness of optimal low-boom designs. *AIAA paper* 2010-9364, 13th AIAA/ISSMO Multidisciplinary Analysis Optimization Conference, Forth Worth, Texas, September 2010
3. K. Palaniappan, P. Sahu, A. Jameson, and J. J. Alonso. Design of adjoint-based laws for wing flutter control. *AIAA Journal of Aircraft*, 48(1):331–335, 2011
4. A. C. Marta and J. J. Alonso. High-speed mhd flow control using adjoint-based sensitivities. In *Proceedings of the 14th AIAA/AHI Space Planes and Hypersonic Systems and Technologies Conference*, Canberra, Australia, 2006. AIAA 2006-8009
5. A. Gopinath, E. van der Weide, J. J. Alonso, and A. Jameson. Three-dimensional unsteady multi-stage turbomachinery simulations using the harmonic balance technique. *AIAA paper 2007-0892*, AIAA 45th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2007
6. J. U. Schlüter, X. Wu, E. van der Weide, S. Hahn, and J. J. Alonso. Integrated LES-RANS of an entire high- spool of a gas turbine. *AIAA paper 06-0897*, 36th AIAA Fluid Dynamics Conference and Exhibit, Reno, NV, January 2006
7. A. C. Marta, J. J. Alonso, and L. Tang. Automatic magnetohydrodynamic control of hypersonic flow using a discrete adjoint formulation. *AIAA paper 2006-0370*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006
8. K. Palaniappan, P. Sahu, J. J. Alonso, and A. Jameson. Active flutter control using an adjoint method. *AIAA paper 2006-0844*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006
9. E. van der Weide, G. Kalitzin, J. Schluter, and J. J. Alonso. Unsteady turbomachinery computations using massively parallel platforms. *AIAA paper 2006-0421*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006
10. Ki-Hwan Lee, Juan J. Alonso, and E. van der Weide. Mesh adaption criteria for unsteady periodic flows using a discrete adjoint time-spectral formulation. *AIAA paper 2006-0692*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006

11. A. Nelson, J. J. Alonso, and T. H. Pulliam. Multi-fidelity aerodynamic optimization using treed meta-models. In *Proceedings of the 18th AIAA Computational Fluid Dynamics Conference*, Miami, FL, June 2007
12. J. R. R. A. Martins, C. A. Mader, and J. J. Alonso. ADjoint: An approach for rapid development of discrete adjoint solvers. In *Proceedings of the 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Portsmouth, VA, 2006. AIAA Paper 2006-7121
13. Joaquim R. R. A. Martins, Juan J. Alonso, and Edwin van der Weide. An automated approach for developing discrete adjoint solvers. In *Proceedings of the 2nd AIAA Multidisciplinary Design Optimization Specialist Conference*, Newport, RI, 2006. AIAA Paper 2006-1608
14. S. Choi, J. J. Alonso, and I. Kroo. Two-level multifidelity design optimization studies for supersonic jets. *AIAA Journal*, 46(3):776–790, 2009
15. 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 paper 05-4997*, 35th AIAA Fluid Dynamics Conference and Exhibit, Toronto, Ontario, June 2005
16. S. Choi, J. J. Alonso, and E. van der Weide. Numerical and mesh resolution requirements for accurate sonic boom prediction of complete aircraft configurations. *AIAA paper 2004-1060*, AIAA 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004
17. M. Fatica, A. Jameson, and J. J. Alonso. StreamFLO: an euler solver for streaming architectures. *AIAA paper 2004-1090*, AIAA 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004
18. K. Hosseini and J. J. Alonso. Practical implementation and improvement of preconditioning methods for explicit multistage flow solvers. *AIAA paper 2004-0763*, AIAA 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004
19. J. U. Schlüter, X. Wu, E. van der Weide, S. Hahn, and J. J. Alonso. Integrated LES-RANS of an entire high- spool of a gas turbine. *AIAA paper 06-0897*, 36th AIAA Fluid Dynamics Conference and Exhibit, Reno, NV, January 2006

20. S. Choi, H. S. Chung, and J. J. Alonso. Design of low-boom supersonic business jet with evolutionary algorithms using adaptive unstructured mesh. *AIAA paper 2004-1758*, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Palm Springs, CA, April 2004
21. Joaquim R. R. A. Martins and Juan J. Alonso. A coupled-adjoint method for high-fidelity MDO. In *Modeling and Optimization: Theory and Applications Conference, McMaster Univ., Hamilton, ON*, July 2004
22. P.A. LeGresley and J.J. Alonso. Improving the performance of design decomposition methods with POD. *AIAA paper 04-4465*, 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, New York, August 2004
23. J. J. Alonso, P. LeGresley, E. van der Weide, and J. R. R. A. Martins. pymdo: A framework for high-fidelity multi-disciplinary optimization. *AIAA paper 04-4480*, 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, August 2004
24. H. S. Chung and J. J. Alonso. Multiobjective optimization using gradient enhanced genetic algorithms. *AIAA paper 04-4325*, 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, August 2004
25. J. U. Schluter, S. Shankaran, S. Kim, H. Pitsch, J. J. Alonso, and P. Moin. Integration of RANS and LES flow solvers for simultaneous flow computations. *AIAA Paper*, 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January
26. J. J. Alonso, J. R. R. A. Martins, J. J. Reuther, R. Haines, and C. Crawford. High-fidelity aero-structural design using a parametric cad-based model. *AIAA paper 2003-3429*, 16th AIAA Computational Fluid Dynamics Conference, Orlando, Florida, June 2003
27. W. C. Reynolds, J. J. Alonso, and M. Fatica. Aircraft gas turbine engine simulations. *AIAA paper 2003-3698*, 16th AIAA Computational Fluid Dynamics Conference, Orlando, Florida, June 2003
28. K. Hosseini and J. J. Alonso. Optimization of multistage coefficients for preconditioned explicit multigrid flow solvers. *AIAA paper 2003-*

- 3705, 16th AIAA Computational Fluid Dynamics Conference, Orlando, Florida, June 2003
29. P. A. LeGresley and J. J. Alonso. Dynamic domain decomposition and error correction for reduced order models. *AIAA paper 03-0250*, 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2003
 30. H. S. Chung, S. Choi, and J. J. Alonso. Supersonic business jet design using knowledge-based genetic algorithm with adaptive, unstructured grid methodology. *AIAA paper 2003-3791*, 21st AIAA Applied Aerodynamics Conference, Orlando, Florida, June 2003
 31. Joaquim R. R. A. Martins, Juan J. Alonso, and Patrick LeGresley. Aero-structural optimization of aircraft configurations using coupled-sensitivity analysis. In *Proceedings of the SIAM Conference on Computational Science and Engineering*, San Diego, CA, February 2003
 32. Joaquim R. R. A. Martins, Juan J. Alonso, and James J. Reuther. A coupled-adjoint sensitivity analysis method for aero-structural optimization. In *Proceedings of the CASI Aircraft Design and Development Symposium*, Montréal, QC, April 2003
 33. J. U. Schluter, S. Shankaran, S. Kim, H. Pitsch, J. J. Alonso, and P. Moin. Integration of RANS and LES flow solvers for simultaneous flow computations. *AIAA Paper.*, 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January
 34. J.J. Alonso, I.M. Kroo, and A. Jameson. Advanced algorithms for design and optimization of quiet supersonic platforms. *AIAA paper 2002-0144*, 40th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2002
 35. H. S. Chung and J.J. Alonso. Using gradients to construct cokriging approximation models for high-dimensional design optimization problems. *AIAA paper 2002-0317*, 40th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2002
 36. M. S. McMullen, A. Jameson, and J. J. Alonso. Application of a non-linear frequency domain solver to the euler and navier-stokes equations. *AIAA paper 2002-0120*, AIAA 40th Aerospace Sciences Meeting & Exhibit, Reno, NV, January 2002

37. H. S. Chung and J. J. Alonso. Design of a low-boom supersonic business jet using cokriging approximation models. *AIAA paper 2002-5598*, 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, September 2002
38. H. S. Chung and J. J. Alonso. Design of a low-boom supersonic business jet using cokriging approximation models. *AIAA Paper 2002-5598*, Proceedings of the 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, 2002
39. S. Nadarajah, A. Jameson, and J. J. Alonso. An adjoint method for the calculation of remote sensitivities in supersonic flow. *Int. Journal of Computational Fluid Dynamics*, 20(2):61–74, 2006
40. S. Kim, J. J. Alonso, and A. Jameson. Design optimization of high-lift configurations using a viscous continuous adjoint method. *AIAA paper 2002-0844*, AIAA 40th Aerospace Sciences Meeting & Exhibit, Reno, NV, January 2002
41. H. Doi and J. J. Alonso. Fluid/structure coupled aeroelastic computations for transonic flows in turbomachinery. *ASME-GT 2002-30313*, ASME Turbo Expo 2002, Amsterdam, The Netherlands, June 2002
42. J. R. R. A. Martins, J. J. Alonso, and J. Reuther. High-fidelity aero-structural design optimization of a supersonic business jet. AIAA Paper 2002-1483, Proceedings of 43rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Denver, CO, April 2002
43. Joaquim R. R. A. Martins, Juan J. Alonso, and James J. Reuther. Complete configuration aero-structural optimization using a coupled sensitivity analysis method. In *Proceedings of the 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization*, Atlanta, GA, September 2002. AIAA Paper 2002-5402
44. S. K. Nadarajah, A. Jameson, and J. J. Alonso. Sonic boom reduction using an adjoint method for wing-body configurations in supersonic flow. *AIAA Paper 2002-5547*, Proceedings of the 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, 2002

45. S. K. Nadarajah, S. Kim, A. Jameson, and J. J. Alonso. Sonic boom reduction using an adjoint method for supersonic transport aircraft configuration. Technical report, Proceedings of the Symposium Transsonicum IV, International Union of Theoretical and Applied Mechanics, Gottingen, Germany
46. J. R. R. A. Martins, P. Sturdza, and J. J. Alonso. The connection between the complex-step derivative approximation and algorithmic differentiation. AIAA Paper 2001-0921, Proceedings of the 39th AIAA Aerospace Sciences Meeting, January 2001
47. P. A. LeGresley and J. J. Alonso. Investigation of non-linear projection for POD based reduced order models for aerodynamics. *AIAA paper 01-0926*, 39th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2001
48. J. R. R. A. Martins, J. J. Alonso, and J. Reuther. Aero-structural wing design optimization using high-fidelity sensitivity analysis. In *Proceedings — CEAS Conference on Multidisciplinary Aircraft Design Optimization, Cologne, Germany*, pages 211–226, June 2001
49. M. McMullen, A. Jameson, and J. J. Alonso. Acceleration of convergence to a periodic steady state in turbomachinery flows. AIAA Paper 2001-0152, AIAA 39th Aerospace Sciences Meeting, January 8–11, Reno, Nevada, January 2001
50. S. Nadarajah, A. Jameson, and J. J. Alonso. An adjoint method for the calculation of non-collocated sensitivities in supersonic flow. Technical report, First MIT Conference on Computational Fluid Dynamics, Cambridge, MA, June 2001
51. P. Peterson, J. R. R. A. Martins, and J. J. Alonso. Fortran to Python interface generator with an application to aerospace engineering. In *Proceedings of the 9th International Python Conference*, Long Beach, CA, January 2001
52. J. R. R. A. Martins, I. M. Kroo, and J. J. Alonso. An automated method for sensitivity analysis using complex variables. AIAA Paper 2000-0689, Proceedings of the 38th AIAA Aerospace Sciences Meeting, January 2000

53. S. Kim, J. J. Alonso, and A. Jameson. Two-dimensional high-lift aerodynamic optimization using the continuous adjoint method. *AIAA paper 2000-4741*, 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000
54. J. Yao, A. Jameson, J.J. Alonso, and F. Liu. Development and Validation of a Massively Parallel Flow Solver for Turbomachinery Flows. Technical Report 00-0882, AIAA 38th Aerospace Sciences Meeting and Exhibit, January 2000
- 55.
56. S. Kim, J. J. Alonso, and A. Jameson. A gradient accuracy study for the adjoint-based navier-stokes design method. *AIAA paper 99-0299*, AIAA 37th Aerospace Sciences Meeting & Exhibit, Reno, NV, January 1999
57. J. Reuther, J. J. Alonso, J. R. R. A. Martins, and S. C. Smith. A coupled aero-structural optimization method for complete aircraft configurations. AIAA Paper 99-0187, Proceedings of the 37th AIAA Aerospace Sciences Meeting, Reno, NV, January, 1999
58. J. J. Reuther, A. Jameson, J. J. Alonso, M. J. Rimlinger, and D. Saunders. Constrained multipoint aerodynamic shape optimization using an adjoint formulation and parallel computers. *AIAA paper 97-0103*, 35th Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 1997
59. J. J. Reuther, J. J. Alonso, J. C. Vassberg, A. Jameson, and L. Martinelli. An efficient multiblock method for aerodynamic analysis and design on distributed memory systems. *AIAA paper 97-1893*, 13th AIAA Computational Fluid Dynamics Conference, June 1997
60. A. Jameson and J. J. Alonso. Automatic aerodynamic optimization on distributed memory architectures. *AIAA paper 96-0409*, 34th Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 1996
61. J. J. Reuther, J. J. Alonso, M. J. Rimlinger, and A. Jameson. Aerodynamic shape optimization of supersonic aircraft configurations via an adjoint formulation on parallel computers. *AIAA paper 96-4045*, 6th AIAA/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996

- 62. J. J. Alonso, L. Martinelli, and A. Jameson. Multigrid unsteady Navier-Stokes calculations with aeroelastic applications. *AIAA paper 95-0048*, AIAA 33rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 1995
- 63. J. J. Alonso, T. J. Mitty, L. Martinelli, and A. Jameson. A two-dimensional multigrid Navier-Stokes solver for multiprocessor architectures. In Satofuka, Periaux, and Ecer, editors, *Parallel Computational Fluid Dynamics: New Algorithms and Applications*, pages 435–442, Kyoto, Japan, May 1994. Elsevier Science B. V. Parallel CFD '94 Conference

2 Other Articles

References

- [1] J. J. Alonso and M. R. Colonno. Multidisciplinary optimization with applications to sonic-boom minimization. *Annual Review of Fluid Mechanics*, 44(1):505–526, 2012.
- [2] F. Palacios, K. Duraisamy, J. J. Alonso, and E. Zuazua. Robust grid adaptation for efficient uncertainty quantification. *AIAA Journal*, 50(7):1538–1546, 2012.
- [3] Q. Wang, K. Duraisamy, J. J. Alonso, and G. Iaccarino. Risk assessment of scramjet unstart using adjoint-based sampling methods. *AIAA Journal*, 50(3):581–592, 2012.
- [4] Z De Vito, N. Joubert, F. Palacios, S. Oakley, M. Medina, M. Barrientos, E. Elsen, F. Ham, A. Aiken, K. Duraisamy, E. Darve, J. J. Alonso, and P. Hanrahan. Liszt: A domain specific language for building portable mesh-based PDE solvers. In *In Proceedings of the 2011 ACM/IEEE Conference on Supercomputing (SC11)*, Seattle, WA, USA, November 2011.
- [5] S. Choi, A. Datta, and J. J. Alonso. Prediction of helicopter rotor loads using time-spectral computational fluid dynamics and an exact fluid-structure interface. *Journal of the American Helicopter Society*, 56(4):1–15, 2011.

- [6] K. Palaniappan, P. Sahu, A. Jameson, and J. J. Alonso. Design of adjoint-based laws for wing flutter control. *AIAA Journal of Aircraft*, 48(1):331–335, 2011.
- [7] A. Marta and J. J. Alonso. Towards optimally seeded airflow on hypersonic vehicles using control theory. *Computers & Fluids*, 39(9):1562–1574, 2010.
- [8] S. Choi, J. J. Alonso, and E. van der Weide. Numerical and mesh resolution requirements for accurate sonic boom prediction. *AIAA Journal of Aircraft*, 46(4):1126–1139, 2009.
- [9] S. Choi, J. J. Alonso, and I. Kroo. Two-level multifidelity design optimization studies for supersonic jets. *AIAA Journal*, 46(3):776–790, 2009.
- [10] J. J. Alonso, P. LeGresley, and V. Pereyra. Aircraft design optimization. *Mathematics and Computers in Simulation*, 79(6):1948–1958, 2009.
- [11] S. Choi, J. J. Alonso, I. Kroo, and M. Wintzer. Multifidelity design optimization of low-boom supersonic jets. *AIAA Journal of Aircraft*, 45(5):1082–1097, 2009.
- [12] C. Mader, J. R. R. A. Martins, J. J. Alonso, and E. van der Weide. Adjoint: An approach for the rapid development of discrete adjoint solvers. *AIAA Journal*, 46(4):863–873, 2008.
- [13] 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(9-10):307–327, 2007.
- [14] M. McMullen, A. Jameson, and J. J. Alonso. Demonstration of nonlinear frequency domain methods. *AIAA Journal*, 44(7):1428–1435, 2006.
- [15] R. Davis, J. J. Alonso, J. Yao, R. Paolillo, and O. Sharma. Prediction of main/secondary-air system flow interaction in a high-pressure turbine. *AIAA Journal of Propulsion and Power*, 21(1):158–166, 2005.
- [16] Joaquim R. R. A. Martins, Juan J. Alonso, and James J. Reuther. A coupled-adjoint sensitivity analysis method for high-fidelity aerostuctural design. *Optimization and Engineering*, 6(1):33–62, March 2005.

- [17] S. Kim, J. J. Alonso, and A. Jameson. Multi-element high-lift configuration design optimization using viscous continuous adjoint method. *AIAA Journal of Aircraft*, 41(5):1082–1097, 2005.
- [18] J. R. R. A. Martins, J. J. Alonso, and J. J. Reuther. High-fidelity aero-structural design optimization of a supersonic business jet. *AIAA Journal of Aircraft*, 41(3):523–530, 2004.
- [19] J. R. R. A. Martins, P. Sturdza, and J. J. Alonso. The complex-step derivative approximation. *ACM Trans. Math. Softw.*, 29(3):245–262, September 2003.
- [20] J. Yao, R. Davis, J. J. Alonso, and A. Jameson. Massively parallel simulation of the unsteady flow in an axial turbine stage. *AIAA Journal of Propulsion and Power*, 18(2):465–471, 2002.
- [21] J. Yao, A. Jameson, J. J. Alonso, and F. Liu. Development and validation of a massively parallel flow solver for turbomachinery flows. *AIAA Journal of Propulsion and Power*, 17(3):659–668, 2001.
- [22] J. J. Reuther, A. Jameson, J. J. Alonso, M. J. Rimlinger, and D. Saunders. Constrained multipoint aerodynamic shape optimization using an adjoint formulation and parallel computers, part 1. *AIAA Journal of Aircraft*, 36(1):51–60, 1999.
- [23] J. J. Reuther, A. Jameson, J. J. Alonso, M. J. Rimlinger, and D. Saunders. Constrained multipoint aerodynamic shape optimization using an adjoint formulation and parallel computers, part 2. *AIAA Journal of Aircraft*, 36(1):61–74, 1999.
- [24] N. A. Pierce and J. J. Alonso. Efficient computation of unsteady viscous flows by an implicit preconditioned multigrid method. *AIAA Journal*, 36(3):401–408, 1998.
- [25] F. Palacios, J. J. Alonso, and A. Jameson. Shape sensitivity of free-surface interfaces using a level set methodology. *AIAA paper 2012-3341*, 42nd AIAA Fluid Dynamics Conference and Exhibit, New Orleans, LA, June 2012.
- [26] M. R. Colonno and J. J. Alonso. Sonic boom minimization revisited: The robustness of optimal low-boom designs. *AIAA paper 2010-9364*, 13th AIAA/ISSMO Multidisciplinary Analysis Optimization Conference, Forth Worth, Texas, September 2010.

- [27] A. C. Marta and J. J. Alonso. High-speed mhd flow control using adjoint-based sensitivities. In *Proceedings of the 14th AIAA/AHI Space Planes and Hypersonic Systems and Technologies Conference*, Canberra, Australia, 2006. AIAA 2006-8009.
- [28] A. Gopinath, E. van der Weide, J. J. Alonso, and A. Jameson. Three-dimensional unsteady multi-stage turbomachinery simulations using the harmonic balance technique. *AIAA paper 2007-0892*, AIAA 45th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2007.
- [29] J. U. Schlüter, X. Wu, E. van der Weide, S. Hahn, and J. J. Alonso. Integrated LES-RANS of an entire high- spool of a gas turbine. *AIAA paper 06-0897*, 36th AIAA Fluid Dynamics Conference and Exhibit, Reno, NV, January 2006.
- [30] A. C. Marta, J. J. Alonso, and L. Tang. Automatic magnetohydrodynamic control of hypersonic flow using a discrete adjoint formulation. *AIAA paper 2006-0370*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006.
- [31] K. Palaniappan, P. Sahu, J. J. Alonso, and A. Jameson. Active flutter control using an adjoint method. *AIAA paper 2006-0844*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006.
- [32] E. van der Weide, G. Kalitzin, J. Schluter, and J. J. Alonso. Unsteady turbomachinery computations using massively parallel platforms. *AIAA paper 2006-0421*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006.
- [33] Ki-Hwan Lee, Juan J. Alonso, and E. van der Weide. Mesh adaption criteria for unsteady periodic flows using a discrete adjoint time-spectral formulation. *AIAA paper 2006-0692*, AIAA 44th Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2006.
- [34] A. Nelson, J. J. Alonso, and T. H. Pulliam. Multi-fidelity aerodynamic optimization using treed meta-models. In *Proceedings of the 18th AIAA Computational Fluid Dynamics Conference*, Miami, FL, June 2007.
- [35] J. R. R. A. Martins, C. A. Mader, and J. J. Alonso. ADjoint: An approach for rapid development of discrete adjoint solvers. In *Proceedings of the 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Portsmouth, VA, 2006. AIAA Paper 2006-7121.

- [36] Joaquim R. R. A. Martins, Juan J. Alonso, and Edwin van der Weide. An automated approach for developing discrete adjoint solvers. In *Proceedings of the 2nd AIAA Multidisciplinary Design Optimization Specialist Conference*, Newport, RI, 2006. AIAA Paper 2006-1608.
- [37] 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 paper 05-4997*, 35th AIAA Fluid Dynamics Conference and Exhibit, Toronto, Ontario, June 2005.
- [38] S. Choi, J. J. Alonso, and E. van der Weide. Numerical and mesh resolution requirements for accurate sonic boom prediction of complete aircraft configurations. *AIAA paper 2004-1060*, AIAA 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004.
- [39] M. Fatica, A. Jameson, and J. J. Alonso. StreamFLO: an euler solver for streaming architectures. *AIAA paper 2004-1090*, AIAA 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004.
- [40] K. Hosseini and J. J. Alonso. Practical implementation and improvement of preconditioning methods for explicit multistage flow solvers. *AIAA paper 2004-0763*, AIAA 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004.
- [41] S. Choi, H. S. Chung, and J. J. Alonso. Design of low-boom supersonic business jet with evolutionary algorithms using adaptive unstructured mesh. *AIAA paper 2004-1758*, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Palm Springs, CA, April 2004.
- [42] Joaquim R. R. A. Martins and Juan J. Alonso. A coupled-adjoint method for high-fidelity MDO. In *Modeling and Optimization: Theory and Applications Conference, McMaster Univ., Hamilton, ON*, July 2004.
- [43] P.A. LeGresley and J.J. Alonso. Improving the performance of design decomposition methods with POD. *AIAA paper 04-4465*, 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, New York, August 2004.
- [44] J. J. Alonso, P. LeGresley, E. van der Weide, and J. R. R. A. Martins. pymdo: A framework for high-fidelity multi-disciplinary optimization.

- AIAA paper 04-4480*, 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, August 2004.
- [45] H. S. Chung and J. J. Alonso. Multiobjective optimization using gradient enhanced genetic algorithms. *AIAA paper 04-4325*, 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, August 2004.
- [46] J. U. Schluter, S. Shankaran, S. Kim, H. Pitsch, J. J. Alonso, and P. Moin. Integration of RANS and LES flow solvers for simultaneous flow computations. *AIAA Paper*, 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January.
- [47] J. J. Alonso, J. R. R. A. Martins, J. J. Reuther, R. Haimes, and C. Crawford. High-fidelity aero-structural design using a parametric cad-based model. *AIAA paper 2003-3429*, 16th AIAA Computational Fluid Dynamics Conference, Orlando, Florida, June 2003.
- [48] W. C. Reynolds, J. J. Alonso, and M. Fatica. Aircraft gas turbine engine simulations. *AIAA paper 2003-3698*, 16th AIAA Computational Fluid Dynamics Conference, Orlando, Florida, June 2003.
- [49] K. Hosseini and J. J. Alonso. Optimization of multistage coefficients for preconditioned explicit multigrid flow solvers. *AIAA paper 2003-3705*, 16th AIAA Computational Fluid Dynamics Conference, Orlando, Florida, June 2003.
- [50] P. A. LeGresley and J. J. Alonso. Dynamic domain decomposition and error correction for reduced order models. *AIAA paper 03-0250*, 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2003.
- [51] H. S. Chung, S. Choi, and J. J. Alonso. Supersonic business jet design using knowledge-based genetic algorithm with adaptive, unstructured grid methodology. *AIAA paper 2003-3791*, 21st AIAA Applied Aerodynamics Conference, Orlando, Florida, June 2003.
- [52] Joaquim R. R. A. Martins, Juan J. Alonso, and Patrick LeGresley. Aero-structural optimization of aircraft configurations using coupled-sensitivity analysis. In *Proceedings of the SIAM Conference on Computational Science and Engineering*, San Diego, CA, February 2003.

- [53] Joaquim R. R. A. Martins, Juan J. Alonso, and James J. Reuther. A coupled-adjoint sensitivity analysis method for aero-structural optimization. In *Proceedings of the CASI Aircraft Design and Development Symposium*, Montréal, QC, April 2003.
- [54] J.J. Alonso, I.M. Kroo, and A. Jameson. Advanced algorithms for design and optimization of quiet supersonic platforms. *AIAA paper 2002-0144*, 40th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2002.
- [55] H. S. Chung and J.J. Alonso. Using gradients to construct cokriging approximation models for high-dimensional design optimization problems. *AIAA paper 2002-0317*, 40th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2002.
- [56] M. S. McMullen, A. Jameson, and J. J. Alonso. Application of a nonlinear frequency domain solver to the euler and navier-stokes equations. *AIAA paper 2002-0120*, AIAA 40th Aerospace Sciences Meeting & Exhibit, Reno, NV, January 2002.
- [57] H. S. Chung and J. J. Alonso. Design of a low-boom supersonic business jet using cokriging approximation models. *AIAA paper 2002-5598*, 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, September 2002.
- [58] H. S. Chung and J. J. Alonso. Design of a low-boom supersonic business jet using cokriging approximation models. *AIAA Paper 2002-5598*, Proceedings of the 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, 2002.
- [59] S. Nadarajah, A. Jameson, and J. J. Alonso. An adjoint method for the calculation of remote sensitivities in supersonic flow. *Int. Journal of Computational Fluid Dynamics*, 20(2):61–74, 2006.
- [60] S. Kim, J. J. Alonso, and A. Jameson. Design optimization of high-lift configurations using a viscous continuous adjoint method. *AIAA paper 2002-0844*, AIAA 40th Aerospace Sciences Meeting & Exhibit, Reno, NV, January 2002.
- [61] H. Doi and J. J. Alonso. Fluid/structure coupled aeroelastic computations for transonic flows in turbomachinery. *ASME-GT 2002-30313*, ASME Turbo Expo 2002, Amsterdam, The Netherlands, June 2002.

- [62] J. R. R. A. Martins, J. J. Alonso, and J. Reuther. High-fidelity aero-structural design optimization of a supersonic business jet. AIAA Paper 2002-1483, Proceedings of 43rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Denver, CO, April 2002.
- [63] Joaquim R. R. A. Martins, Juan J. Alonso, and James J. Reuther. Complete configuration aero-structural optimization using a coupled sensitivity analysis method. In *Proceedings of the 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization*, Atlanta, GA, September 2002. AIAA Paper 2002-5402.
- [64] S. K. Nadarajah, A. Jameson, and J. J. Alonso. Sonic boom reduction using an adjoint method for wing-body configurations in supersonic flow. *AIAA Paper 2002-5547*, Proceedings of the 9th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Atlanta, GA, 2002.
- [65] S. K. Nadarajah, S. Kim, A. Jameson, and J. J. Alonso. Sonic boom reduction using an adjoint method for supersonic transport aircraft configuration. Technical report, Proceedings of the Symposium Transsonicum IV, International Union of Theoretical and Applied Mechanics, Gottingen, Germany.
- [66] J. R. R. A. Martins, P. Sturdza, and J. J. Alonso. The connection between the complex-step derivative approximation and algorithmic differentiation. AIAA Paper 2001-0921, Proceedings of the 39th AIAA Aerospace Sciences Meeting, January 2001.
- [67] P. A. LeGresley and J. J. Alonso. Investigation of non-linear projection for POD based reduced order models for aerodynamics. *AIAA paper 01-0926*, 39th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 2001.
- [68] J. R. R. A. Martins, J. J. Alonso, and J. Reuther. Aero-structural wing design optimization using high-fidelity sensitivity analysis. In *Proceedings — CEAS Conference on Multidisciplinary Aircraft Design Optimization, Cologne, Germany*, pages 211–226, June 2001.
- [69] M. McMullen, A. Jameson, and J. J. Alonso. Acceleration of convergence to a periodic steady state in turbomachinery flows. AIAA Paper 2001–0152, AIAA 39th Aerospace Sciences Meeting, January 8–11, Reno, Nevada, January 2001.

- [70] S. Nadarajah, A. Jameson, and J. J. Alonso. An adjoint method for the calculation of non-collocated sensitivities in supersonic flow. Technical report, First MIT Conference on Computational Fluid Dynamics, Cambridge, MA, June 2001.
- [71] P. Peterson, J. R. R. A. Martins, and J. J. Alonso. Fortran to Python interface generator with an application to aerospace engineering. In *Proceedings of the 9th International Python Conference*, Long Beach, CA, January 2001.
- [72] J. R. R. A. Martins, I. M. Kroo, and J. J. Alonso. An automated method for sensitivity analysis using complex variables. AIAA Paper 2000-0689, Proceedings of the 38th AIAA Aerospace Sciences Meeting, January 2000.
- [73] S. Kim, J. J. Alonso, and A. Jameson. Two-dimensional high-lift aerodynamic optimization using the continuous adjoint method. *AIAA paper 2000-4741*, 8th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Long Beach, CA, September 2000.
- [74] J. Yao, A. Jameson, J.J. Alonso, and F. Liu. Development and Validation of a Massively Parallel Flow Solver for Turbomachinery Flows. Technical Report 00-0882, AIAA 38th Aerospace Sciences Meeting and Exhibit, January 2000.
- [75] S. Kim, J. J. Alonso, and A. Jameson. A gradient accuracy study for the adjoint-based navier-stokes design method. *AIAA paper 99-0299*, AIAA 37th Aerospace Sciences Meeting & Exhibit, Reno, NV, January 1999.
- [76] J. Reuther, J. J. Alonso, J. R. R. A. Martins, and S. C. Smith. A coupled aero-structural optimization method for complete aircraft configurations. AIAA Paper 99-0187, Proceedings of the 37th AIAA Aerospace Sciences Meeting, Reno, NV, January, 1999.
- [77] J. J. Reuther, A. Jameson, J. J. Alonso, M. J. Rimlinger, and D. Saunders. Constrained multipoint aerodynamic shape optimization using an adjoint formulation and parallel computers. *AIAA paper 97-0103*, 35th Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 1997.
- [78] J. J. Reuther, J. J. Alonso, J. C. Vassberg, A. Jameson, and L. Martinelli. An efficient multiblock method for aerodynamic analysis and

design on distributed memory systems. *AIAA paper 97-1893*, 13th AIAA Computational Fluid Dynamics Conference, June 1997.

- [79] A. Jameson and J. J. Alonso. Automatic aerodynamic optimization on distributed memory architectures. *AIAA paper 96-0409*, 34th Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 1996.
- [80] J. J. Reuther, J. J. Alonso, M. J. Rimlinger, and A. Jameson. Aerodynamic shape optimization of supersonic aircraft configurations via an adjoint formulation on parallel computers. *AIAA paper 96-4045*, 6th AIAA/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, Bellevue, WA, September 1996.
- [81] J. J. Alonso, L. Martinelli, and A. Jameson. Multigrid unsteady Navier-Stokes calculations with aeroelastic applications. *AIAA paper 95-0048*, AIAA 33rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 1995.
- [82] J. J. Alonso, T. J. Mitty, L. Martinelli, and A. Jameson. A two-dimensional multigrid Navier-Stokes solver for multiprocessor architectures. In Satofuka, Periaux, and Ecer, editors, *Parallel Computational Fluid Dynamics: New Algorithms and Applications*, pages 435–442, Kyoto, Japan, May 1994. Elsevier Science B. V. Parallel CFD '94 Conference.