

References

- Barringer, M.D., Richard, O.T., Stitzel, S.M., Walter, J.P. and Thole, K.A. (2002) "Flow Field Simulations of a Gas Turbine Combustor," *ASME J of Turbomachinery*, Vol. 124, pp. 508-516.
- Barringer, M.D. (2001) "Flow Field Simulations of a Gas Turbine Combustor," thesis, Mechanical Engineering Department, Virginia Polytechnic Institute and State University, July 2001.
- Bangert, B.A., Kohli, A., Sauer, J.H., and Thole, K.A. (1997) "High Freestream Turbulence Simulation in a Scaled-up Turbine Vane Passage," ASME Paper No. 97-GT-51.
- Becz, S., Majewski, M.S., and Langston, L.S. (2003) "Leading Edge Modification Effects on Turbine Cascade Endwall Loss," ASME Paper No. GT2003-38898.
- Bernstein, L., and Hamid, S. (1996) "On the Effect of a Strake-Like Junction Fillet on the Lift and Drag of a Wing," *Aeronaut. J.*, Feb., pp. 39-52.
- Blair, M.F. (1974) "An Experimental Study of Heat Transfer and Film Cooling on Large-Scale Turbine Endwalls," *ASME J of Heat Transfer*, Nov., pp. 524-529.
- Burd, S.W. and Simon, T.W. (2000) "Effects of Slot Bleed Injection over a Contoured Endwall on Nozzle Guide Vane Cooling Performance: Part 1-Flow Field Measurements," ASME Paper No. 2000-GT-199.
- Burd, S.W., Satterness, C.J., and Simon, T.W. (2000) "Effects of Slot Bleed Injection over a Contoured Endwall on Nozzle Guide Vane Cooling Performance: Part II-Thermal Measurements," ASME Paper No. 2000-GT-200.
- Choudhury, D. (1993) "Introduction to the Renormalization Group Method and Turbulence Modeling," Fluent, Inc. Technical Memorandum TM-107.
- Cohen, H., Rogers, G.F.C., and Saravanamuttoo, H.I.H. (1987) Gas Turbine Theory, New York: John Wiley & Sons, Inc.
- Colban, W.F., Thole, K.A., and Zess, G. (2002) "Combustor-Turbine Interface Studies: Part 1-Endwall Measurements," ASME Paper No. GT-2002-30526.
- Colban, W.F., Lethander, A.T., Thole, K.A., and Zess, G. (2002) "Combustor-Turbine Interface Studies: Part 2-Flow and Thermal Field Measurements," ASME Paper No. GT-2002-30527.

- Cox, S.E., Haftka, R.T., Baker, C., Grossman, B., Mason, W.H., and Watson, L.T. (2001) "A Comparison of Global Optimization Methods for the Design of a High-speed Civil Transport," *J of Global Optimization*, Vol. 21, pp. 415-433.
- Crawford, M.E. (1994) TEXSTAN: A Program for Numerical Computation of Two-Dimensional Internal and External Boundary Layer Flows, Manual TEXSTAN.
- Devenport, W.J., Agarwal, N.K., Dewitz, M.B., Simpson, R.L., and Poddar, K. (1990) "Effects of a Fillet on the Flow Past a Wing-Body Junction," *AIAA J.*, Vol. 28, No. 12, pp. 2017-2024 (also presented as AIAA Paper No. 89-0986).
- Devenport, W.J., Simpson, R.L., Dewitz, M.B., and Agarwal, N.K. (1992) "Effects of a Leading-Edge Fillet on the Flow Past an Appendage-Body Junction," *AIAA J.*, Vol. 30, No. 9, Sept., pp. 2177-2183 (also presented as AIAA Paper No. 91-0252).
- Engineous Software, Inc., *iSIGHT Designer's Guide*, Version 5.0, 1999 (Engineous Software, Inc.: North Carolina).
- Engineous Software, Inc., *iSIGHT Developer's Guide Volume 1: Process Integration*, 1999 (Engineous Software, Inc.: North Carolina).
- Engineous Software, Inc., *iSIGHT Developer's Guide Volume 2: MDOL*, 1999 (Engineous Software, Inc.: North Carolina).
- Floudas, C.A. (1999) Deterministic Global Optimization: Theory, Algorithms and Applications, Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Fluent Inc., *Fluent User's Guide*, Version 5.0, 1998 (Fluent Inc.: New Hampshire).
- Fluent Inc., *Gambit I Modeling Guide*, 1998 (Fluent Inc.: New Hampshire).
- Gaugler, R.E., and Russell, L.M. (1984) "Comparison of Visualized Turbine Endwall Secondary Flows and Measured Heat Transfer Patterns," *ASME J of Engineering for Gas Turbines and Power*, Vol. 106, pp. 168-172.
- Goldstein, R.J. and Spores, R.A. (1988) "Turbulent Transport on the Endwall in the Region Between Adjacent Turbine Blades," *ASME J of Heat Transfer*, Vol. 110, pp. 862-869.
- Graziani, R.A., Blair, M.F., Taylor, J.R. and Mayle, R.E. (1980) "An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large Scale Turbine Blade Cascade," *ASME J of Engineering for Power*, Vol. 102, pp. 257-267.
- Hartland, J.C., Gregory-Smith, D.G., Harvey, N.W., and Rose, M.G. (1999) "Non-Axisymmetric Turbine End Wall Design: Part II-Experimental Validation," ASME Paper No. 99-GT-338.

- Harvey, N.W., Rose, M.G., Taylor, M.D., Shahpar, S., Hartland, J., and Gregory-Smith, D.G. (1999) "Non-Axisymmetric Turbine End Wall Design: Part I-Three-Dimensional Linear Design System," ASME Paper No. 99-GT-337.
- Hermanson, K.S. and Thole, K.A. (1999) "Effect of Inlet Conditions on Endwall Secondary Flows," Report 99-2, Convective Heat Transfer Laboratory, Mechanical Engineering Department, University of Wisconsin-Madison.
- Hermanson, K.S., and Thole, K.A. (2000) "Effect of Inlet Conditions on Endwall Secondary Flows," *AIAA J of Propulsion*, Vol. 16, No. 2, pp. 286-296 (also presented as AIAA Paper No. 99-0241).
- Hermanson, K.S., and Thole, K.A. (2002) "Effect of Non-Uniform Inlet Conditions on Endwall Secondary Flows," ASME Paper No. GT-2002-30188.
- Horst, R., and Pardalos, P.M. eds. (1995) Handbook of Global Optimization, Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Hylton, L.D., Mihelc, M.S., Turner, E.R., and York, R.E. (1981) "Experimental Investigation of Turbine Endwall Heat Transfer," AFWAL-TR-81-2077, 3 Volumes.
- Incropera, F.P., and DeWitt, D.P. (1990) Fundamentals of Heat and Mass Transfer, 3rd ed., New York: John Wiley & Sons, Inc.
- Ingber, L. (1989) "Very Fast Simulated Re-Annealing," *J Mathl. Comput. Modelling*, Vol. 12, pp. 967-973.
- Jones, D.R., Perttunen, C.D., and Stuckman, B.E. (1993) "Lipschitzian Optimization without the Lipschitz Constant," *J of Optimization Theory and Application*, Vol. 79, pp. 157-181.
- Kang, M., Kohli, A., and Thole, K.A. (1999) "Heat Transfer and Flowfield Measurements in the Leading Edge Region of a Stator Vane Endwall," *ASME J of Turbomachinery*, Vol. 121, pp. 558-568.
- Kang, M., and Thole, K.A. (2000) "Flowfield Measurements in the Endwall Region of a Stator Vane," *ASME J of Turbomachinery*, Vol. 122, pp. 458-466.
- Kim, S.-E., and Choudhury, D. (1995) "A Near-Wall Treatment Using Wall Functions Sensitized to Pressure Gradient," ASME FED Vol. 217, Separated and Complex Flows.
- Kline, S.J., and McClintock, F.A. (1953) "Describing Uncertainties in Single Sample Experiments," *Mech. Eng.*, Jan., pp. 3-8.

- Koff, B.L. (1991) "Spanning the Globe with Jet Propulsion," presented at the AIAA Annual Meeting and Exhibit, Arlington, VA, AIAA Paper No. 2987.
- Kost, F. and Nicklas, M. (2001) "Film-Cooled Turbine Endwall in a Transonic Flow Field: Part I-Aerodynamic Measurements," *ASME J of Turbomachinery*, Vol. 123, pp. 709-719 (also presented as ASME Paper No. 2001-GT-0145).
- Kubendran, L.R., and Harvey, W.D. (1985) "Juncture Flow Control Using Leading-Edge Fillets," AIAA Paper No. 85-4097.
- Kubendran, L.R., Bar-Sever, A., and Harvey, W.D. (1988) "Flow Control in a Wing/Fuselage Type Juncture," AIAA Paper No. 88-0614.
- Lakshminarayana, B. (1996) Fluid Dynamics and Heat Transfer of Turbomachinery, New York: John Wiley & Sons, Inc.
- Langston, L.S., Nice, M.L., and Hooper, R.M. (1977) "Three-Dimensional Flow Within a Turbine Cascade Passage," *ASME J of Engineering for Power*, Vol. 99, pp. 21-28.
- Langston, L.S. (1980) "Crossflows in a Turbine Cascade Passage," *ASME J of Engineering for Power*, Vol. 102, pp. 866-874.
- Langston, L.S. (2001) "Secondary Flows in Axial Turbines-A Review," Heat Transfer in Gas Turbine Systems, Annals of the New York Academy of Sciences, Vol. 934, pp. 11-26.
- Lauder, B.E. and Spalding, D.B. (1974) "The Numerical Computation of Turbulent Flows," *Computer Methods in Applied Mechanics and Engineering*, 3:269-289.
- Lethander, A.T., Thole, K.A., Zess, G., and Wagner, J. (2003) "Optimizing the Vane-Endwall Junction to Reduce Adiabatic Wall Temperatures in a Turbine Vane Passage," ASME Paper No. GT2003-38939.
- Marchal, Ph., and Sieverding, C.H. (1977) "Secondary Flows Within Turbomachinery Bladings," AGARD Conf. Proc., No. 214.
- Mattingly, J.D. (1996) Elements of Gas Turbine Propulsion, New York: McGraw-Hill, Inc.
- Moffat, R.J. (1985) "Using Uncertainty Analysis in the Planning of an Experiment," *ASME J of Fluids Engineering*, Vol. 107, pp. 173-178.
- Moffat, R.J. (1988) "Describing the Uncertainties in Experimental Results," *Experimental Thermal and Fluid Science*, Vol. 1, pp. 3-17.

- Nicklas, M. (2001) "Film-Cooled Turbine Endwall in a Transonic Flow Field: Part II- Heat Transfer and Film-Cooling Effectiveness," *ASME J of Turbomachinery*, Vol. 123, pp. 720-729 (also presented as ASME Paper No. 2001-GT-0146).
- Oke, R., Simon, T., Burd, S.W., Vahlberg, R. (2000) "Measurements in a Turbine Cascade Over a Contoured Endwall: Discrete Hole Injection of Bleed Flow," ASME Paper No. 2000-GT-214.
- Oke, R., Simon, T., Shih, T., Zhu, B., Lin, Y.L., Chyu, M. (2001) "Measurements Over a Film-Cooled, Contoured Endwall with Various Coolant Injection Rates," ASME Paper No. 2001-GT-140.
- Pierce, F.J., Frangistas, G.A., and Nelson, D.J. (1988) "Geometry Modification Effects on a Junction Vortex Flow," *Proc. of Symp. on Hydrodynamic Performance Enhancement for Marine Applications*, pp. 37-44, Newport, RI.
- Radomsky, R. (2000) "High Freestream Turbulence Studies on a Scaled-Up Stator Vane," dissertation, Mechanical Engineering Department, University of Wisconsin-Madison.
- Radomsky, R., and Thole, K.A. (2000a) "Highly Turbulent Flowfield Measurements Around a Stator Vane," *ASME J of Turbomachinery*, Vol. 122, pp. 255-262 (also presented as ASME Paper No. 99-GT-253).
- Radomsky, R., and Thole, K.A. (2000b) "High Freestream Turbulence Effects in the Endwall Leading Edge Region," *ASME J of Turbomachinery*, Vol. 122, pp. 699-708 (also presented as ASME Paper No. 2000-GT-202).
- Roy, R.P., Squires, K.D., Gerendas, M., Song, S., Howe, W.J., and Ansari, A. (2000) "Flow and Heat Transfer at the Hub Endwall of Inlet Vane Passages-Experiments and Simulations," ASME Paper No. 2000-GT-198.
- Sauer, H., Müller, R., and Vogeler, K. (2000) "Reduction of Secondary Flow Losses in Turbine Cascades by Leading Edge Modifications at the Endwall," *ASME J of Turbomachinery*, Vol. 123, pp. 207-213 (also presented as ASME Paper No. 2000-GT-0473).
- Schwab, J.R., Stabe, R.G. and Whitney, W.J. (1983) "Analytical and Experimental Study of Flow Through an Axial Turbine Stage With a Nonuniform Inlet Radial Temperature Profile," AIAA Paper No. 83-1175.
- Sharma, O.P. and Butler, T.L. (1987) "Predictions of Endwall Losses and Secondary Flows in Axial Flow Turbine Cascades," *ASME J of Turbomachinery*, Vol. 109, pp. 229-236.

- Shih, T.I-P., and Lin, Y.-L. (2002) "Controlling Secondary-Flow Structure by Leading-Edge Airfoil Fillet and Inlet Swirl to Reduce Aerodynamic Loss and Surface Heat Transfer," ASME Paper No. GT-2002-30529.
- Sieverding, C.H. (1985) "Recent Progress in the Understanding of Basic Aspects of Secondary Flows in Turbine Blade Passages," *ASME J of Engineering for Gas Turbines and Power*, Vol. 107, pp. 248-257.
- Sonada, T. (1985) "Experimental Investigation on Spatial Development of Streamwise Vortices in a Turbine Inlet Guide Vane Cascade," ASME Paper No. 85-GT-20.
- Sung, C.-H., and Lin, C.-W. (1988) "Numerical Investigation on the Effect of Fairing on the Vortex Flows Around Airfoil/Flat-Plate Junctions," AIAA Paper No. 88-0615.
- Sung, C.-H., Yang, C.-I., and Kubendran, L.R. (1988) "Control of Horseshoe Vortex Junction Flow Using a Fillet," *Proc. of Symp. on Hydrodynamic Performance Enhancement for Marine Applications*, pp. 13-20, Newport, RI.
- Sutherland, W. (1893) *Phil. Mag.*, Vol. 5, p. 507.
- Takeishi, K., Matsuura, M., Aoki, S., and Sato, T. (1990) "An Experimental Study of Heat Transfer and Film Cooling on Low Aspect Ratio Turbine Nozzles," *ASME J of Turbomachinery*, Vol. 112, pp. 488-496.
- Vanderplaats, G.N. (1984) Numerical Optimization Techniques for Engineering Design: With Applications, New York: McGraw-Hill, Inc.
- Yakhot, V. and Orszag, S. (1986) "Renormalization Group Analysis of Turbulence: I. Basic Theory," *Journal of Scientific Computing*, 1(1): 1-51.
- Zess, G.A., and Thole, K.A. (1999) "Methods of Horseshoe Vortex Reduction in a Gas Turbine Stator Vane," Report 99-3, Convective Heat Transfer Laboratory, Mechanical Engineering Department, University of Wisconsin-Madison.
- Zess, G.A., and Thole, K.A. (2002) "Computational Design and Experimental Evaluation of Using a Leading Edge Fillet on a Gas Turbine Vane," *ASME J of Turbomachinery*, Vol. 124, pp. 167-175 (also presented as ASME Paper No. 2001-GT-404).