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Final Report

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Theoretical Aerodynamics, Transonic Flow

A substantial body of work on transonic aerodynamics and problems using related mathematical techniques has been carried out with the generous support of the Air Force Office of Scientific Research.

A listing of the main publications produced with the support of this grant is given below.

In addition, graduate and research fellows have received partial support while pursuing their degrees. A list of these is also included below together with their present affiliation.


Julian D. Cole

Principal Investigator

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Books

J. D. Cole and L. P. Cook. *Transonic Aerodynamics*, North Holland 1986.

Publications and Reports

- V. Villamizar, "Elastic Scattering from a Viscous Incompressible Fluid Sphere at Low Reynolds Number", RPI CAMAC Report 87-8, 1987.
- J. J. Xu, "An Asymptotic Theory of Axisymmetric Dendrite Growth at Small Undercooling", RPI CAMAC Report 87-9, 1987. To appear in Physical Review.
- J. D. Cole and L. P. Cook, "Transonic Choking and Stabilization for Flows about Slender Bodies", RPI CAMAC Report 87-12, 1987. To appear in Z.A.M.P.
- J. D. Cole, "Note on Entropy and Wave Drag", RPI CAMAC Report 87-13, 1987.
- B. Cassis, O. Tikhomirov and B. Wagner, "Asymptotic Solution for the Nonlinear Two Dimensional Chemical Vapor Deposition Problem", RPI CAMAC Report 87-14, 1987. Submitted to SIAM J. Applied Math.
- G. Schleiniger, "Quasi Transonic Flow past Delta Wings", RPI CAMAC Report 85-1, 1985. See also Quarterly of Applied Mathematics.
- S. Rimbey, "Transonic Jets: A Numerical Approach in the Hodograph Plane", RPI Math Report 145, January 1985.
- J. D. Cole and Baoyu Ling, "Airfoil Design at Sonic Velocity", RPI Math Report 146, February 1985.
- J. D. Cole, "Early Transonic Ideas in the Light of Later Developments". To appear in Physics of Fluids.
- J. D. Cole, "Note on the Axisymmetric Sonic Jet", SIAM J. Appl. Math., 43(4), August 1983.



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Students and Postdoctoral Fellows

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J. J. Xu	Ph.D.	NASA - Marshall Space Flight Center