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This is the final report for a grant supporting work in applied mathematics related to transonic aerodynamics and problems using related mathematical techniques. The report details students supported and papers published under this grant.

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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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B. Wagner	Graduate Student	Ph.D. student RPI
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