

Catherine Anne Moseley Matos

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Objective: A professor or instructor position in mathematics or engineering at a teaching-oriented institution.

- Education:** **Georgia Institute of Technology, Atlanta, GA** September 1990 – 2001
- **Ph.D. in Aerospace Engineering, December 2001** GPA 3.56 / 4.0
Minor in Mathematics
Dissertation: "Download Reduction on a Wing-Rotor Configuration"
Advisor: Dr. Narayanan Komerath
 - **Master of Aerospace Engineering, December 1995** GPA 3.54 / 4.0
"Multi-scalar Differential Diffusion with Mean Scalar Gradients in Isotropic Turbulence"
Advisor: Dr. P.K. Yeung
 - **Bachelor of Aerospace Engineering, June 1994** GPA 3.80 / 4.0
With highest honors

Teaching Experience:

- Mathematics Instructor*, Clayton College and State University, Part-time faculty. Teach 2001-2002
Mathematical Modeling, incorporating StudyWorks computer software;
Fundamentals of Mathematics; Computing with Spreadsheets.
- Adjunct Faculty*, Art Institute of Atlanta 2002
Teach College Geometry and Algebra
- Adjunct Faculty*, Chattahoochee Technical College 2002
Teach Intermediate Algebra
- Teaching Assistant*, Georgia Institute of Technology, Mathematics Department, 1993
Calculus II - Integral Calculus. Conducted twice weekly recitation classes,
prepared practice tests for a class of 45 students.
- Mentor*, Supervised and mentored outstanding high school students in two 8 week 1999, 2000
NASA/Georgia Tech Student High School Apprenticeship Research Programs
(SHARP Plus) while they conducted research in the Experimental Aerodynamics
Group research laboratory at Georgia Tech.
- Substitute Lecturer*, Georgia Tech, Aerospace Engineering Department. Prepared and 1998-2001
gave class lectures on an as-needed basis for freshman, sophomore and graduate
level Aerospace Engineering classes.
- Student Teacher*, Kids Interested in Discovering Science Club. Designed and taught 1992-1994
weekend classes at Georgia Tech with hands-on experiments to explore various
aspects of science with 5th grade students.

Research Experience:

Experimental-

- Laser visualization of unsteady flow features between a rotor and wing, 3D velocity 1996 -2001
and pressure measurements in the Harper Wind Tunnel at Georgia Tech
- Parafoil surface geometry and stall characteristic measurements for NASA 1997
- Tilt-rotor tests at Boeing Vertol, Philadelphia Dec. 1996
- JT8D engine inflow measurements at Delta Airlines Technical Operations, Atlanta July 1998
- Refinement of Spatial Correlation Velocimetry Technique to measure large scale flow 1996-1998
velocities

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Computational-

Modification of three-dimensional potential code to model wing-rotor interaction	1999-2001
Adaptation of Direct Numerical Simulation code to massively parallel computers	1994-95
Undergraduate Research Assistant- Aerospace Engineering Investigated behavior of passive scalars in turbulent flow	1993-94

Leadership Positions:

Research Assistantship, School of Aerospace Eng., Georgia Tech. Coordinate research teams of graduate and undergraduate students, help prepare and present research project annual reports	1994-2001
“NASA Means Business” Student Competition - Team Leader, Georgia Tech Team - Finalist in competition all three years - Gained Public Speaking experience with varied audiences, including engineering, elementary school and MBA students, government and industry personnel, in both large groups and one-on-one settings.	1999-2001
Team leader for JT8D engine inflow tests at Delta Airlines Technical Operations	July 1998

Skills:

Public Speaking
Technical Writing and Editing
Fluent in FORTRAN, Microsoft Office, Windows, HTML, LabView, Numerical methods, Pascal, Unix
Familiar with C++, Maple, Matlab, FAST, Tecplot, Framemaker
Flow Visualization and Measurement
Photogrammetry

Advanced Math	Partial Differential Eqns	Finite Dimensional Vector Spaces	Complex Analysis
Coursework:	Scientific Computing	Advanced Engineering Mathematics	Random Processes
	Probability	Stochastic Processes	

Honors: National Science Foundation Fellowship	1994-98
Georgia Tech Presidential Fellowship	1994-98
Georgia Tech President’s Scholarship	1990-94
Outstanding Junior AE Award	1993
Tau Beta Pi - Engineering Honor Society	
Sigma Gamma Tau - Aerospace Honor Society Secretary and Initiation Coordinator	1993-94
Gamma Beta Phi - Honor / Service Society	
Phi Kappa Phi - Honor Society	

Additional Professional Activities:

Georgia Tech President’s Scholarship Evaluation Committee	1996-2000
Developed web pages for Experimental Aerodynamics Group, NASA Means Business team, AHS Aerodynamic Measurement Techniques Technical Committee, MNT Financial Services, Inc., Mill Grove Homeowner’s Association	1996-2001
Poster Paper at American Astronomical Society Annual Meeting, Pasadena Acoustic Shaping Applications in Space Based Manufacturing	Nov. 1999
Poster Paper, AIAA Mini-Symposium, Atlanta	Feb. 2000
Student Member, AIAA Aerodynamic Measurement Techniques Technical Committee	1997-1999
Attended Cornell workshop on massively parallel computing	Sept. 1995

Professional Affiliations:

Member, American Institute of Aeronautics and Astronautics (AIAA)
Member, American Helicopter Society (AHS)

Publications & Reports:

- Komerath, N.M., Matos, C.A., Reddy, U.R., "Flowfield Issues Related to Tiltrotors", AHS Specialists' Meeting on Tiltrotor/Runway Independent Aircraft Technology and Applications, Arlington, TX, March 2001.
- Matos, C.A., Coker, A., Changeau, D., Ganesh, B., Hausaman, J., Kriengsiri, P., Thienprayoon, P., Tan, X.Y., Komerath, N.M., "Acoustic Shaping, Inc: Leaders in Space-Based Manufacturing, Year 2: Customer Engagement Plan", Report to NASA as part of the "NASA Means Business" Program, May 2000.
- Matos, C.A., Komerath, N.M., "Download Modification using Surface Blowing", AHS Specialists Meeting on Aeromechanics, Atlanta, GA, November 2000.
- Matos, C.A., Franklin, K., Ganesh, B., Hausaman, J., Wanis, S., Komerath, N.M., "Developing the Space-Based Economy: An Architecture for NASA Mars Customer Engagement", Report to NASA as part of the "NASA Means Business" Program, June 2001.
- Wanis, S.S., Matos, C.A., Komerath, N.M., "Acoustic Shaping: Application to Space Based Construction", AIAA 00-1020, 38th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 2000.
- Komerath, N.M., Matos, C.A., Coker, A., Wanis, S., Hausaman, J., Ames, R.G., Tan, X.Y., "Acoustic Shaping: Enabling Technology for a Space-Based Economy", Abstracts of Proceedings of the First Space Resources Utilization Roundtable, Golden, Co., Lunar & Planetary Institute, Oct. 1999.
- Matos, C.A., Ames, R., Changeau, D., Coker, A., Hausaman, J., Tan, X.Y., Wanis, S., Komerath, N.M., "Acoustic Shaping, Inc.: Leaders in Space-Based Manufacturing", Report to NASA as part of the "NASA Means Business" Program, July 1999.
- Matos, C.A., Reddy, U.C., and Komerath, N.M., "Rotor Wake/Fixed Wing Interactions with Flap Deflection", Proceedings of the 55th Annual Forum of the American Helicopter Society, Montreal, Canada, May 1999.
- Matos, C.A., Reddy, U.C., Mahalingam, R., Ames, R.G. & Komerath, N.M., "Flow Measurements in the JT8D Test Cells", Report to Delta Airlines Technical Operations, Aug. 1998.
- Matos, C.A., Klapper, J., Mahalingam, R., Funk, R.B., Komerath, N.M., "Aerodynamics of the X-38 Parafoil", Report to NASA JSC, April 1998.
- Matos, C. A., Mahalingam, R., Ottinger, G., Klapper, J., Funk, R. B., and Komerath, N.M., "Wind Tunnel Measurements of Parafoil Geometry Aerodynamics", AIAA Paper 98-0606, 36th AIAA Aerospace Sciences Meeting, January 1998, Reno, NV.
- Reddy, U.C., Matos, C.A., Mahalingam, R, Funk, R.B. & Komerath, N.M., "Velocity Measurement in a Rotor Wake Interacting with a Fixed Wing", AIAA 98-1033, 36th Aerospace Sciences Meeting & Exhibit, Reno, NV, Jan. 98.
- Reddy, U.C., Matos, C.M., Mahalingam, R. & Komerath, N.M., "Whole-Field Velocity Measurement In Unsteady Periodic Flows", AIAA 97-2325, Proceedings of the 15th AIAA Applied Aerodynamics Conference, Atlanta, GA, Jun. 97.
- Reddy, U.C., Matos, C.A., Darden, L.A., Villareal, L., Ames, R.G., Funk, R.B. & Komerath, N.M., "Measurement of Fountain Effect Flows Using Spatial Correlation Velocimetry", Report to RITA Inc./Bell Helicopter Textron Inc., GITAER-EAG-97-6, May 1997.
- Komerath, N.M., Funk, R.B., Reddy, U.C., Darden, L.A., Mahalingam, R.M., Ames, R.G., Wong, O.D., Villareal, L., Gregory, J., Moseley, C.A., Harden, C. & Akovenko, J., "Velocity measurements around a tilt-rotor model", Report to Boeing Defense & Space Systems, Helicopter Division, GITAER-EAG-97-2, Feb. 1997.
- Komerath, N.M., Ames, R.G., Darden, L.A., Moseley, C.A., "Characterization of Micro-UAV Behavior in Gusty Environments" Proceedings of the First International Conference on Micro Air Vehicles, Atlanta, GA, Feb. 97 .
- Yeung, P.K., Moseley, C.A. "A Message-passing, Distributed Memory Parallel Algorithm for Direct Numerical Simulation of Turbulence with Particle Tracking", Parallel Computational Fluid Dynamics: Implementations and Results Using Parallel Computers, A. Ecer, J. Periaux, N. Satofuka and S. Taylor, editors, Elsevier Science B.V. 1995, pp 473-480.
- Yeung, P.K., Moseley, C.A. "Effects of Mean Scalar Gradients on Differential Diffusion in Isotropic Turbulence", AIAA 95-0866, 33rd AIAA Aerospace Sciences Meeting, Reno, NV, January 1995.