Tanim Islam

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Education

2003–2007 **Ph. D.**, *École Normale Supérieure and University of Virginia*, Paris, France, and Charlottesville, VA.
Thesis title: Transport and Stability Analysis of Dilute Magnetized Accreting Plasmas
Advisor: Prof. Steven Balbus

2000–2003 **M. S.**, *Massachusetts Institute of Technology*, Cambridge, MA.
Advisor: Prof. Bruno Coppi

1997–2000 **B. S.**, *California Institute of Technology*, Pasadena, CA.
Thesis title: Parity Violations in $B \to \gamma K \pi \pi$ Decays
Advisor: Prof. Alan Weinstein

Publications

○ "The Axisymmetric Magnetoviscous Instability With Magnetic Tension," Islam, T. & Balbus, S., ApJ **633**, 328-333 (2005).
○ "The Magnetoviscous-Thermal Instability," Islam, T. & Balbus, S., in preparation.
○ "Kinetic Magnetohydrodynamics in a Rotating Stratified Medium, With Applications to Hot Dilute Magnetized Accretion," Islam, T., in preparation.
○ "Physical Modifications of Collisionless, Angular-Momentum Transporting Magnetohydrodynamic Modes in Hot Dilute Magnetized Accreting Systems," Islam, T., in preparation.

Conference Proceedings

○ "Hall Astrophysics in Dusty Plasmas," Islam, T. and Rudakov, L., American Physical Society Division of Plasma Physics, Long Beach, CA, November 2001.
○ "Non-Viscous Transport of Angular Momentum in Accretion Disks," Islam, T. & Coppi, B., American Physical Society Division of Plasma Physics, Long Beach, CA, November 2002.
○ "Analysis of Nonaxsiymmetric Modes in Accretion Disks at Marginal Stability With Nonlinear Diffusion and Dissipation," Islam, T. and Coppi, B., Sherwood Fusion Theory Conference, Corpus Christi, TX, Spring 2003.
○ "The Magnetoviscous Instability in Rotating Systems," Jansky Symposium, University of Virginia, February 2005.
○ "The Magnetoviscous-Thermal Instability in Dilute Magnetized Astrophysical Plasmas," Islam, T. & Balbus, S., Semaine de l'Astrophysique Francaise, eds. F. Casoli, T. Contini, J. M. Hameury, and L. Pagani, Paris, France, June 2006.
○ "The Magnetothermal Instability in Dilute Accreting Plasmas," Islam, T. & Balbus, S., American Physical Society Division of Plasma Physics, Philadelphia, PA, October 2006.
○ "The Magnetothermal Instability And Its Role In Angular Momentum Transport in Hot, Dilute, Magnetized Accretion," Islam, T., American Physical Society Division of Plasma Physics, Orlando, FL, November 2007.

Conference Papers

- "Analysis of Airspace Tube Structures," Sheth, K. Islam, T., & Kopardekar, P., AIAA Digital Avionic Systems Conference, AIAA, St. Paul, MN, October 2008
- "Design and Simulation Methodology to Improve the Performance of Airspace Tube Networks," Sridhar, B., Islam, T., and Gupta, G., AIAA Guidance, Navigation, and Control Conference, AIAA, Toronto, ON, Canada, August 2008

Experience

Employment

2008–2010   **Software Engineer III**, *University of California Santa Cruz UARC*, Moffett Field, CA.

Provided computer engineering support with existing air traffic software tools for NASA Air Traffic Researchers, contributed to research topics in the field of air traffic management, and developed new software frameworks for air traffic research.

Detailed achievements:

- Significant enhancements to Future Air Traffic Management Concepts Evaluation Tool (FACET), software suite for researching air traffic concepts:
  - Incorporation of spherical geometry functionality, and alternate coordinate mapping representations, into FACET.
    - · Delaunay triangulation/voronoi mapping.
    - · Generic polygon operations (union, intersection, XOR) for arbitrary spherical polygons.
    - · Contour generation.
  - Air traffic complexity measurement UI module.
  - Weather coverage module.
  - Tube network design GUI.
- Aircraft flight simulator with basic functionality, behavior congruent with FACET.
  - Approximately 5×10^4 lines of code.
  - Simulation of aircraft on flight plan, or great circle routes.
  - Conflict detection and resolution, barrier rerouting, and wind-optimal routing.
  - Designed for multithreading, built upon Java concurrent packaging for near-linear speedup on multithreaded architectures.
  - Java executables built upon this framework.
- Common object model for aircraft weather data reader, using netcdf-java scientific data reader as backend.
  - Approximately 2.1×10^4 lines of code.
  - Common framework for instantiation, data access, and utility functions for variety of weather products used in NASA Aeronautics division: CWAM, CIWS, RUC, NOWRAD.
  - Framework for creating readers for new weather products (CoSPA, LAMP).
  - CIWS to CWAM conversion tools.
  - Presentation describing weather reading framework shown here.

Teaching

2003–2004	**Teaching Assistant**, *University of Virginia*, Charlottesville, VA.

Development of coursework and lectures for introductory and summer astronomy courses, with grading duties.

Detailed achievements:

- Life Beyond the Earth (ASTR 342)
  - Wrote and graded problem sets and exams for this summer class, discussing issues related to the study of extraterrestrial life.
  - Lecture to the general public on astrophysical topics at McCormick Observatory.
  - Course website is located at `ASTR342`.
- Second year astronomy parts I (ASTR 211) and II (ASTR 212)
  - Graded homeworks and organized discussions of homework in recitation sections, as well as designed example questions and answers for exam preparation.
  - Discussion section websites are located at `ASTR211 Fall 2003`, `ASTR211 Fall 2004`, and `ASTR212`.
- Tutor: Fall 2004
  - Regularly assisted undergraduate students with coursework in electricity and magnetism, statistical mechanics, and astrophysics.

Fall 2002	**Teaching Assistant**, *Massachusetts Institute of Technology*, Cambridge, MA.

Course: Introductory Physics (8.01)

Spring 2000	**Teaching Assistant**, *California Institute of Technology*, Pasadena, CA.

Course: Introductory Astronomy (AY 1)

Computer Skills

Scientific Computing (Java)	Apache Commons Math, JAMA, JLapack, Parallel Colt, CPLEX/Concert (Java CPLEX API)
Scientific Computing (C/C++/Fortran)	GSL (GNU Scientific Library), ATLAS (Linear Algebra implementation), Lapack/ScaLAPACK
Scientific Computiong (Other)	Mathematica with J/Link, Matlab, Maple, SciPy (scientific python), IDL
Distributed Computing	Java Concurrency Framework, MPI/PVM, GridGain, Hadoop (with Linux implementation, Cloudera), Amazon EC2
Development Environments	Eclipse, Emacs
UI/Multimedia Development	Swing, JFreeChart, Java Media Framework, GStreamer and FFMpeg scripting
Revision Control System and Packaging	Subversion, Maven 2 server administration and packaging, CVS
Productivity Software	TeX/LaTeX 2_ε suite, Openoffice.org, Microsoft Office
Linux/UNIX Programming	UNIX scripting (shell, bash, python), gawk, sed, Linux server administration

Scholarships and Awards

1999–2000	Caltech Merit Scholarship ($6,000)
1997–2000	Philip Morris Scholarship ($20,000)

1999	Bonsall Prize, Undergraduate Research
1999	Summer Undergraduate Research Fellowship ($4,000)
1998	Summer Undergraduate Research Fellowship ($4,000)
1997	U. S. A. Physics Olympiad

Languages

Bengali	**fluent**
French	**conversant**

References

hello	Available upon request