# Tanim Islam

Lawrence Livermore National Laboratory
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**Objectives**

*Development within the burgeoning field of terascale and utility distributed computing: contribution to utility computing frameworks, client tools, and scientific frameworks leveraged towards distributed computing.*

**Experience**

**Lawrence Livermore National Laboratory**
7000 East Avenue
Livermore, CA 94551
*Design Physicist*
April 2011 – present

Three unclassified sets of projects:

- **Prompt Diagnostics of Fast Events**: lead on efforts to perform prompt neutron and gamma diagnostic forward modeling of fast (sub-microsecond and nanosecond) legacy experiments. Work has involved applications to issues of interest to the DOE complex, development of newer analysis tools built upon transport codes used to model these problems, mentoring summer students to explore areas of research here, and the development of unique techniques to address these problems.
- **Modeling high altitude nuclear explosions using physics codes**: Involves algorithmic implementation of enhanced collisional, chemical, ionic, and electronic physics; understanding of interesting physical phenomena in high altitude nuclear explosions with applicability to more general physics and to problems in national defense; and the enhancement of code functionality for standardized, scriptable usage, and independent data analysis.
- **High energy density ReShock experiment**: modeling and help in the design of experimentally accessible, and experimentally significant, hydrodynamic experiments launched on the National Ignition Facility and Omega.

**University of California Santa Cruz UARC**
NASA Ames Reseach Center
Moffett Field, CA 94035
*Software Engineer III*
February 2008 – April 2011

- Development of aircraft simulator for research, behavior congruent to FACET, designed for concurrency and portable to utility computing frameworks.
- Common object model for aircraft weather data reader, built upon Netcdf-Java. Functionality for variety of different scientific data products.
- Significant improvements to Future Advanced Concepts Evaluation Tool (FACET), air traffic control software.

**University of Virginia**
Department of Astronomy
Charlottesville, VA 22903
*Teaching Assistant*
May 2003-December 2004

- Development of coursework and lectures for introductory and summer astronomy courses, with grading duties. Example course websites located here.
- Tutoring students in astrophysics, mathematics homework.

**Education**

- University of Virginia
  Ph.D., Astrophysics, GPA: 4.0
  Thesis: Transport And Stability Analysis of Dilute Magnetized

*References provided upon request*

Accretion Flows.

- California Institute of Technology
  B. S., Physics, GPA: 3.7
  Thesis: Parity Violation in B → γKππ Decays.

**Qualifications**

- Proficient in Java, C, C++, Shell, Python, High Performance Computing.
- Some familiarity with Database Programming (SQL language).
- C/C++ distributed and GPU programming (MPI/PVM, CUDA).
- Proficient in Fortran, Python, and Visualization skillset geared towards high performance computing.
  - Numpy/Scipy and scientific python frameworks (IPython, Continuum), visualization, python C/C++/Fortran wrapping.
  - Cython programming
  - SLURM/Moab HPC job scheduling with Python design patterns.
  - VisIt visualization toolkit with scripting and data input, and tools to interface with VisIt and VisIt visualization output.
  - Tools for data analysis and post-processing of Mercury particle transport code and PMESH mesh generating tool.
- Some examples of my public code can be found on my Github page: https://github.com/tanimislam.

**Research**

- "The Collisional Magnetoviscous-Thermal Instability," Islam, T., ApJ **787**, 53 (2014).
- "Axisymmetric Waves and Nonlinear Structures in Hall Plasmas," Islam, T., Phys. Plasmas **19**, 062903 (2012).
- "The Magnetoviscous-Thermal Instability," Islam, T., ApJ **746**, 8 (2012).
- "The Axisymmetric Magnetoviscous Instability With Magnetic Tension," Islam, T. & Balbus, S., ApJ **633**, 328-333 (2005).
- "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 2010.

**Outreach and Community Service**

- Yearly or twice-yearly outreach to these high schools: Irvington HS in Fremont, CA; American HS in Fremont, CA; Maggie Walker HS in Richmond, VA.
- Outreach on LLNL High Energy Density (HED) internship program to Columbia University Applied Physics Department and the University of Virginia, on multiple occasions.
- HED mentor: 2015, 2016, 2017, 2018, 2019.

**Affiliations** American Physical Society, American Nuclear Society

**References** Available upon request

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