Vishal Tiwari

Atlanta, GA

EDUCATION

Georgia Institute of Technology, *Atlanta, GA*
Ph.D., Physics *Aug. 2020 – Current.*
Advisor: Prof. Tamara Bogdanović

University of Massachusetts-Dartmouth, *Dartmouth, MA*
Master of Science, Physics *Sep. 2018 – Jul. 2020*
MS Thesis: Probing Type Ia Supernovae through Simulations and Observations
Advisor: Prof. Robert Fisher

International Institute of Information Technology - Hyderabad, *India*
Master of Science, Computer Science and Engineering *Aug. 2014 – Jul. 2015*
MS Thesis: Geo-Visualization in 4D environment - Simulation of floods over an Urban Area
Advisor: Prof. K. S. Rajan

International Institute of Information Technology - Hyderabad, *India*
Bachelor of Technology (Honours), Computer Science and Engineering *Aug. 2010 – Jul. 2014*

PUBLICATIONS

- **Tiwari, Vishal**, Or Graur, Robert Fisher, Ivo Seitenzahl, Shing-Chi Leung, Ken'ichi Nomoto, Hagai Binyamin Perets, and Ken Shen. "The late-time light curves of Type Ia supernovae: confronting models with observations." Monthly Notices of the Royal Astronomical Society 515, no. 3 (2022): 3703-3715.
- Roy, Niranjan C., **Vishal Tiwari**, Alexey Bobrick, Daniel Kosakowski, Robert Fisher, Hagai B. Perets, Rahul Kashyap, Pablo Lorén-Aguilar, and Enrique García-Berro. "3D Hydrodynamical Simulations of Helium-ignited Double-degenerate White Dwarf Mergers." The Astrophysical Journal Letters 932, no. 2 (2022): L24.

CONFERENCES AND TALKS

- *International High-Performance Computing Summer School*, July 18 - 30, 2021, Virtual.
- *APS New England 2018 Fall section meeting, November 3, 2018* - Talk on **"Constraining Type Ia Supernovae with Models and Observations of Late-Time Light Curves."**
- *22nd Eastern Gravity Meeting, May 31st, 2019* - Talk on **"Dimensional Dynamically Driven Double-Degenerate Double-Detonation Simulations for Type Ia Supernova."**
- *High Performance Computing Day, UMass Lowell, May 21, 2019* - Poster on "**Three Dimensional Dynamically Driven Double-Degenerate Double-Detonation Simulations for Type Ia Supernova."**
- XSEDE HPC Workshop - Summer Boot Camp - June 3-6, 2019 from Boston University.
- **A Chan Vese based method of texture extraction for automated texture draping of 3D geospatial objects**, *2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS). July 26-31, 2015; Milan, Italy*, **Vishal Tiwari**, K. S. Rajan

SKILLS & OTHERS

Astrophysical Simulation Tools: Athena++, FLASH, MESA, GIZMO
Programming Languages/Scripting: C/C++, Fortran, Python, Matlab , Java , Bash, Javascript
Data Analysis and Visualization Tools/libraries: Matplotlib, yt, VisIt, OpenGL, Processing
Debuggers: pdb, Arm DDT, gdb

HPC Skills: MPI, OpenMP
HPC Systems used: NASA-Pleiades, TACC-Stampede2, GaTech-PACE, UMass Dartmouth-Carnie

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RESEARCH/TEACHING EXPERIENCE

Graduate Research Assistant, *Georgia Tech, Atlanta, GA* *Jan. 2022 – current.*
Circumbinary disk and dynamical friction

- Working on three-dimensional numerical simulations of a circumbinary disk around massive black hole binaries.
- Simulations of dynamical friction in the presence of radiation feedback around massive black holes.

Graduate Teaching Assistant, *Georgia Tech, Atlanta, GA* *Aug. 2020 – Dec. 2021*
Responsible for taking laboratory and problem sessions, holding office hours, and grading for the following physics course:

- PHYS 2211 (Intro Physics)

Graduate Research Assistant, *UMass Dartmouth, MA* *Sep. 2018 – Jul. 2020*
Worked on the progenitor problem of Type Ia Supernova

- Worked on three-dimensional numerical simulations to study the "dynamically driven double degenerate double detonation"(D6) model for Type Ia supernova.
- Late-time light curve study to constraint the progenitors of Type Ia supernova.

Research Intern, *Indian Institute of Astrophysics , India* *Nov. 2017 – Mar. 2018*
Worked on X-ray spectral analysis of Low Surface Brightness galaxies.

Teaching Assistant, *IIIT-Hyderabad , India*
Responsible for taking tutorial sessions, managing assignment portal and grading exams for the following Computer Science courses:

- Principle of Programming Languages *Aug. 2013 – Dec. 2013*
- Spatial Informatics *Aug. 2014 – Dec. 2014*

WORK EXPERIENCE

Technology Associate — Morgan Stanley, *Bangalore, India* *Aug. 2015 – Oct. 2016*
Worked with the Global Banking Team as a Java developer developing lending based services.

Software Development Intern — HackerRank, *Bangalore, India* *May. 2014 – Jul. 2014*
Worked on expanding width and depth of HackerRank Brahma Api and adding blog support for HackerRank users.

Software Development Intern — Google Summer of Code, *2013* *May. 2013 – Aug. 2013*
Worked for Open Source Geospatial Foundation (OSGeo).
