Rishabh Solanki

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Research Interests

Compact binary stellar object mergers, Type Ia supernovae, Machine learning, Deep Neural Networks, Accretion disks, Magnetohydrodynamics, general relativity, cosmology

Research Experience

Master's Thesis: *Evolution of white dwarf mergers with magnetohydrodynamic and alpha disk prescription*, *SEP 2021 - ongoing* (Adviser: Robert Fisher, PhD)

- Developed MHD solver to understand the post-merger evolution of Carbon Oxygen white dwarfs. Implementation is drawn and motivated from Bouchut solver as given in Waagan et al. (2011)

Undergraduate thesis: ***Simulation of celestial bodies interacting under gravitational field,*** *MAY 2017- AUG18* (Adviser: Ugur Guven, PhD)

- Used RK4 scheme to interpolate the orbital trajectories of objects under influence of a gravitational source.
- Extended the solver to include effects like orbital decay, albedo and third body perturbations.

Reduction in Background Noise in the data of distant celestial bodies (Intern, Instruments Research & Development Establishment) *MAY – SEP 2017*

- worked on estimation of centroid shift in the light curve data to account for the shimmering of the atmosphere.

Work Experience

Research Assistant

Fisher Computational Astrophysics Group (novastella.org)

SEP 1, 2021 – Present

Developed MHD solvers for magnetohydrodynamical simulations of white dwarf mergers

Graduate Teaching Assistant

Department of Physics, University of Massachusetts Dartmouth

SEP 2021 – MAY 2022

Managed and taught recitation and laboratory classes in the undergraduate series, Physics for Science and Engineering.

Education

Master of Science, Physics
University of Massachusetts Dartmouth
SEP 2021- MAY 2023, current GPA 4.0

Bachelor of Technology, Aerospace Engineering
University of Petroleum and Energy Studies (UPES)
SEP 2014 - MAY 2018, GPA 3.0

Skills

Computer Languages: Python, Java, FORTRAN, SQL, C, JavaScript, HTML

Software and Tools: Word, Excel, LaTeX, MATLAB, FLASH

Languages: English, Hindi

Awards

- Award of Excellence, Infinity Space Club, 2018
- The prestigious Space Quiz, Ignite, 2016
- Special Mention, 7th International Innovation Day, 2012
- Ranked Ace in National Merit Scholarship Test, 2010

Community service

I am currently an active member in the following organizations/clubs at UMass Dartmouth.

- Graduate Student Senate
- Society of Physics Students
- Outdoor club

Co-organizer: Infinity Space Club, UPES *(SEP 2016 - MAY 2018)*

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