

# Rishabh Solanki

rsolanki@umassd.edu

[rishabh01solanki.github.io](https://rishabh01solanki.github.io)

---

## 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- AUG 2018 (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](https://novastella.org))

SEP 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.

<b>Education</b>	<b>Master of Science, Physics</b> University of Massachusetts Dartmouth SEP 2021- MAY 2023, current GPA 4.0
	<b>Bachelor of Technology, Aerospace Engineering</b> University of Petroleum and Energy Studies (UPES) SEP 2014 - MAY 2018, GPA 3.0
<b>Skills</b>	<b>Computer Languages:</b> Python, Java, FORTRAN, SQL, C, JavaScript, HTML <b>Software and Tools:</b> Word, Excel, LaTeX, MATLAB, FLASH <b>Languages:</b> English, Hindi
<b>Awards</b>	<ul style="list-style-type: none"> <li>• Award of Excellence, Infinity Space Club, 2018</li> <li>• The prestigious Space Quiz, Ignite, 2016</li> <li>• Special Mention, 7<sup>th</sup> International Innovation Day, 2012</li> <li>• Ranked Ace in National Merit Scholarship Test, 2010</li> </ul>
<b>Community service</b>	<p>I am currently an active member in the following organizations/clubs at UMass Dartmouth.</p> <ul style="list-style-type: none"> <li>• Graduate Student Senate</li> <li>• Society of Physics Students</li> <li>• Outdoor club</li> </ul> <p><b>Co-organizer:</b> Infinity Space Club, UPES (SEP 2016 - MAY 2018)</p>