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Research Interests

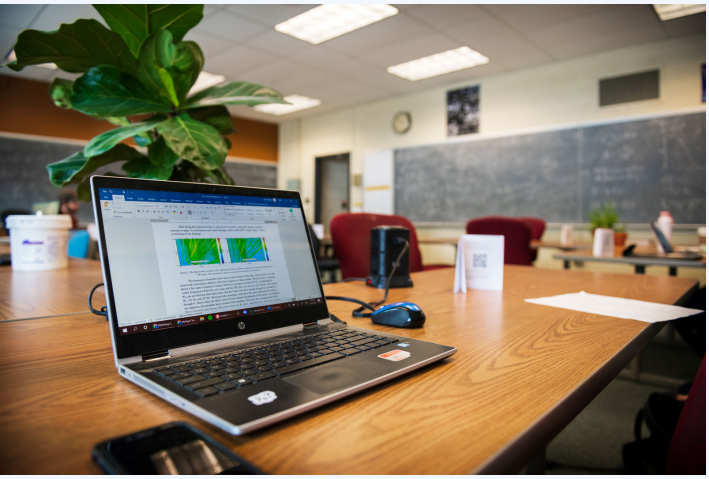
- Cosmology
- Neutrinos Cosmology
- Large-scale structure and Cosmic Microwave Background radiation
- Dark energy and dark matter models
- Machine Learning applied on cosmological challenges
- Bayesian analysis
- Predictive Modeling

Links of Interest

Department of Physics

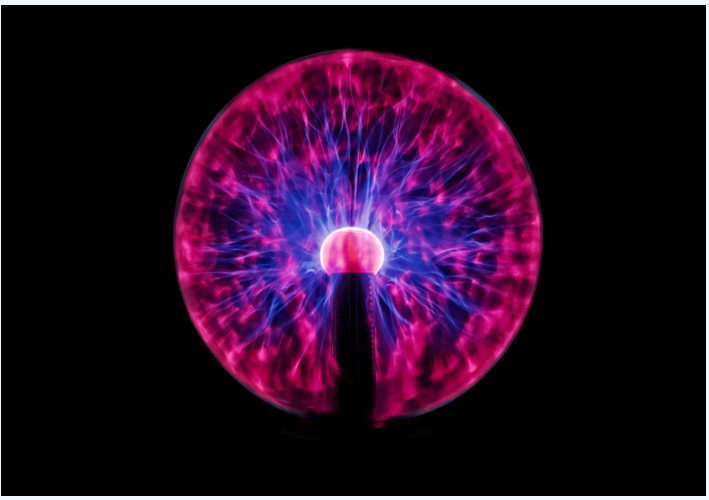
Institute of Computing and Cybersystems

Research Synopsis



Field-Level Emulator for Non-Standard Cosmologies:
Construct a sophisticated field-level emulator to predict the behavior of critical physical fields in non-standard cosmological simulations. Utilize machine learning methodologies for efficient and accurate emulation, reducing the computational overhead associated with traditional simulations.

Machine Learning Tools for Cosmic Surveys:
Apply and develop innovative new machine learning tools tailored for extracting cosmological information from vast datasets generated by cosmic surveys. Enhance the precision and speed of data analysis, enabling deeper insights into the large-scale structure of the universe.



Impact of Neutrino Masses on Cosmological Observables:
Investigate the influence of neutrino masses on cosmological observables through a combination of simulations and data analysis. Employ machine learning to discern subtle signatures and correlations, providing a nuanced understanding of the interplay between neutrinos and the cosmos.

Galaxies Formation and Evolution Properties Using Machine Learning:
Apply advanced machine learning techniques to unravel the intricate processes governing galaxy formation and evolution. Identify key features and parameters influencing galactic properties, facilitating a more comprehensive comprehension of the cosmic narrative.

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For more information

Publications