HEASA2023

3D hydrodynamic simulations of white dwarf-main-sequence star colisions

Contributed Talk //

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Session 2 //

Wednesday, 6 September @ 12:00 SAST

Recently inaugurated telescopes, such as the MeerKAT radio telescope and the upcoming Rubin Observatory Legacy Survey of Space and Time (RO-LSST), will be able to detect millions of transient events in the night sky. Stellar collisions resulting in exotic objects, e.g., CK Vulpeculae, may be detectable among such transients, giving us an opportunity to investigate the different characteristics and parameter space for a broader combination of stars and environments. Simulations will play a key role in characterizing these events and selecting interesting targets for follow-up. In this talk, I will present 3D simulations of white dwarf-main-sequence star collisions using smoothed-particle hydrodynamics (SPH), and discuss the predictions for the energetics, morphologies and mass-loss properties that can be expected from these types of interactions in different environments such as galactic nuclei and globular clusters. Additionally implementing nuclear reaction networks and radiative transfer codes, predictions can be made for the emission signatures and light curves of these events that can be used to distinguish them in these large observational surveys.

Sponsored by the Department of Science and Innovation (DSI) and the National Research Foundation (NRF) through the South African Gamma-Ray Astronomy Programme (SA-GAMMA)