

ICTS Astrophysical Relativity Seminar

Title : Low Mass Black Holes from Dark Core Collapse

Speaker : Anupam Ray (Tata Institute of Fundamental Research, Mumbai)

Date : Wednesday, 7th October 2020

Time : 02:00 pm (IST)

Abstract : Unusual masses of the black holes being discovered by gravitational wave experiments pose fundamental questions about the origin of these black holes. More interestingly, black holes with masses smaller than the Chandrasekhar limit ($\sim 1.4 M_{\odot}$) are essentially impossible to produce through any standard stellar evolution. Black holes of primordial origin, with fine-tuned parameters and with no well-established formation mechanisms, are the most discussed explanation of these objects. The notable alternative proposals: implosion of a compact object due to a tiny black hole transit or cumulative accumulation of self-interacting, asymmetric fermionic dark matter, are either ineffective or appeal to fairly baroque dark matter models. In this talk, I will discuss a new production channel of sub-Chandrasekhar mass black holes, non-annihilating DM with non-zero interaction strength with stellar nuclei, which is a vanilla scenario, can naturally explain these low mass black holes. I will also point out several avenues to test the origin of these low mass black holes.

Venue : Online Seminar

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