Reconstructing PTA measurements via early seeding of supermassive black holes

Wednesday 9 July 2025 11:00 (20 minutes)

The global network of pulsar timing arrays have recently announced the detection of a stochastic gravitational wave background (SGWB) in the nano-Hertz frequency regime. In this talk, I will discuss the implications of early seeding of supermassive black holes (SMBHs) for the observed SGWB. Assuming that these SMBHs were seeded by the collapse of supermassive, dark matter–powered stars (dark stars), I will demonstrate that the population of remnants from these sources can account for the observed SGWB. This in addition with the potential for dark stars to explain the recent JWST observations of high-redshift galaxies emphasises the role self-annihilating dark matter can play in offering solution to some of the puzzles in the high redshift Universe.

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