

A Z_4 symmetric model for self-resonant dark matter

Thursday, 21 August 2025 14:40 (20 minutes)

Models of multi-component dark matter can explain small-scale problems through the presence of self-interaction. We propose a model where DM consists of two scalar fields stabilized by a Z_4 symmetry and which can take part in annihilation or semi-annihilation processes. Some of these scatterings can be Sommerfeld enhanced through the u-channel without the need of a light mediator. The semi-annihilation, in particular, can produce boosted DM particles that can be detected by neutrino or direct detection experiments, as well as dark photons or dark Higgs that can give signals in indirect detection searches. In this work, we analyze the standard limits for this model and also the consequences of the u-channel resonance in small-scale data, the calculation of relic abundance, and the signals relevant for direct and indirect detection experiments.

Primary authors: LEE, Hyun Min (Chung-Ang University); SONG, Junho (Chung ang university); JUSTINO, Lucca (Chung-Ang University); KIM, Seongsik (Chung-Ang University)

Presenter: JUSTINO, Lucca (Chung-Ang University)

Session Classification: Parallel session 5