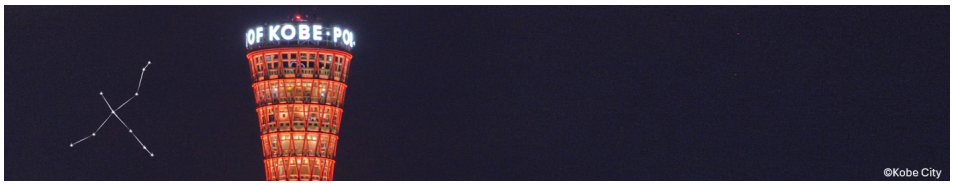

Contribution ID: **3** Type: **not specified**

Local Dark Matter Evaluated with Cosmological Simulation Data

Tuesday, 24 February 2026 16:27 (1 minute)

We evaluate the local dark matter density and velocity distribution using the public data from IllustrisTNG, one of the cosmological simulations. In direct detection experiments, the local dark matter density and velocity distribution are used, and the evaluation of the experimental results depends strongly on these quantities. Astronomical observations suggest that the local dark matter density is around 0.3 GeV/cm^3. The velocity distribution of dark matter is often assumed to follow an isotropic Maxwellian distribution. However, dark matter cannot be directly observed, and the Milky Way has a history of merging with smaller galaxies. Therefore, using simulations to evaluate the properties of local dark matter is useful. In this presentation, we discuss the conditions used to extract environments analogous to the local one from the simulation data, as well as the resulting local dark matter density and velocity distribution.

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Session Classification: Poster session