

Fermion dark matter model with U(1) gauge symmetry

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We investigate models with a gauge symmetry which is spontaneously broken by an additional Higgs field. In this framework, dark matter (DM) is stabilized by the remnant discrete symmetry originated from the gauge symmetry. We classify such a scenario in cases with the local U(1) symmetry and the global U(1) symmetry. In order to discuss how can we distinguish each case, we here focus on a scenario for fermion DM. We search parameter regions considering various constraints such as searches for DM, second Higgs boson, and dark photon or dark radiation. One of the experimental interests, we expect to explain the gamma-ray excess as the DM indirect detection in the local model. This talk is based on a collaboration with Seungwon Baek, Pyungwon Ko and Wan-Il Park.

Presenter: MATSUI, Toshinori (Korea Institute for Advanced Study)

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