Contribution ID: **22** Type: **Contributed Talk**

# Light mass window of inert doublet dark matter with lepton portal interaction

*Tuesday 10 December 2024 17:30 (20 minutes)*

We study phenomenology of a light scalar dark matter (DM). In the model, there are an inert doublet scalar and a singlet Dirac fermion $\psi$, both charged under a global Z_2 symmetry. The mass of the lightest inert scalar H can be lighter than 10 GeV by imposing appropriate relations between three scalar quartic couplings. The lightest Z_2 odd particle is stable and DM. In this paper, focusing on the parameter space where H is lighter than $\psi$ and is DM, we discuss DM physics related to relic density, direct detection, indirect detection, collider searches and other cosmological observations. We clarify differences from the case where $\psi$ is instead DM, which has been focused on in the previous works.

**Authors:** Mr HIGUCHI, Ryo (Kindai University); Dr OKAWA, Shohei (KEK); Dr IGURO, Syuhei (Nagoya U.); OMURA, Yuji (Kindai University)

**Presenter:** OMURA, Yuji (Kindai University)

**Session Classification:** Dark Matter