Contribution ID: **66** Type: **Oral**

A Radiative Neutrino Mass Model with SIMP Dark Matter

Thursday 10 August 2017 16:45 (15 minutes)

We propose the first viable radiative seesaw model, in which the neutrino masses are induced radiatively via the two-loop Feynman diagram involving Strongly Interacting Massive Particles (SIMP). The stability of SIMP dark matter (DM) is ensured by a Z5 discrete symmetry, through which the DM annihilation rate is dominated by the 3 to 2 self-annihilating processes. The right amount of thermal relic abundance can be obtained with perturbative couplings in the resonant SIMP scenario, while the astrophysical bounds inferred from the Bullet cluster and spherical halo shapes can be satisfied. We show that SIMP DM is able to maintain kinetic equilibrium with thermal plasma until the freeze-out temperature via the Yukawa interactions associated with neutrino mass generation.

Author: Dr TOMA, Takashi (Technical University of Munich)

Co-authors: Dr TSUMURA, Koji (Kyoto University); Mr HO, Shu-Yu (California Institute of Technology)

Presenter: Dr TOMA, Takashi (Technical University of Munich)

Session Classification: Particle physics

Track Classification: Particle physics (energy frontier, intensity/precision frontier, other theory)