Contribution ID: **59**   Type: **Afternoon Session**

Inert Doublet Model signatures at Future e+e-Colliders

Wednesday 24 April 2019 18:55 (15 minutes)

The Inert Doublet Model (IDM) is one of the simplest extensions of the Standard Model (SM), providing a dark matter candidate. It is a two Higgs doublet model with a discrete Z_2 symmetry, that prevents the scalars of the second doublet (inert scalars) from coupling to the SM fermions and makes the lightest of them stable. We study a large statistics of IDM scenarios, which are consistent with current constraints on direct detection, including the most recent bounds from XENON1T experiment and relic density of dark matter, as well as with all collider and low-energy limits. We propose a set of benchmark points with different kinematic features, that promise detectable signals at future e^+e^- colliders. Two inert scalar pair-production processes are considered, $e^+e^- \rightarrow H^+H^-$ and $e^+e^- \rightarrow AH$, followed by decays of $H^\pm$ and A into the final states which include the lightest and stable neutral scalar dark matter candidate H. Significance of the expected observations is studied for different benchmark models and different running scenarios, for center of mass energies up to 3 TeV. Numerical results are presented for the signal signatures with two muons or an electron and a muon in the final state, while the qualitative conclusions can also be drawn for the semi-leptonic signatures.

Authors: KALINOWSKI, Jan Henryk (University of Warsaw (PL));   Dr KOTLARSKI, Wojciech (TU - Dresden); ROBENS, Tania Natalie (Rudjer Boskovic Institute (HR)); SOKOLOWSKA, Dorota (University of Warsaw); Dr SOPICKI, Pawel (Institute of Nuclear Research Polish Academy of Sciences (PL)); ZARNECKI, Aleksander (University of Warsaw (PL))

Presenter: ZARNECKI, Aleksander (University of Warsaw (PL))

Session Classification: Contributed talks