Contribution ID: **46** Type: **Oral presentation using Zoom**

Dark Matter and Collider Searches at ILC in S_3 -Symmetric 2HDM with Vector Like Leptons

Wednesday, 27 October 2021 15:30 (20 minutes)

We study the S_3-symmetric two Higgs doublet model by adding two generations of vector like leptons (VLL) which are odd under a discrete Z_2-symmetry. The lightest neutral component of the VLL acts as a dark matter (DM) whereas the full VLL set belongs to a dark sector with no mixings allowed with the standard model fermions. We analyse the model in light of dark matter and collider searches. We show that the DM is compatible with the current relic density data as well
as satisfying all direct and indirect dark matter search constraints. We choose some representative points in the model parameter space allowed by all aforementioned dark matter constraints and propose a few collider signatures, namely di-lepton, four-lepton and mono-lepton+2jet along with transverse missing energy that can be easily tested at the International Linear Collider (ILC), in contrast to the LHC machine due to cleaner backgrounds.

1st preferred time slot for your oral presentation

19:00-21:00 JST (12:00-14:00 CEST, 6:00-8:00 EDT, 3:00-5:00 PDT)

2nd preferred time slot for your oral presentation

15:30-17:30 JST (8:30-10:30 CEST, 2:30-4:30 EDT, 23:30-1:30 PDT)

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Session Classification: H-2: BSM particle production

Track Classification: Parallel sessions: Topical Groups: Session H: BSM particle production