Contribution ID: 320

Type: Parallel

How a Future Leptonic Collider Will Indirectly Probe Neutralino Dark Matter

Saturday, 2 June 2018 18:10 (20 minutes)

We apply the covariant derivative expansion method to integrate out the neutralinos and charginos in the minimal supersymmetric Standard Model. The results are presented as set of pure bosonic dimension-six operators in the Standard Model effective field theory. In global fitting to the proposed leptonic collider constraint projections, special phenomenological emphasis is paid to the gaugino mass unification scenario (M2 \simeq 2M1) and anomaly mediation scenario (M1 \simeq 3.3M2). These results show that the precision measurement experiments in future lepton colliders will provide a very useful complementary job in probing the electroweakino sector, in particular, filling the gap of the soft lepton plus the missing E_T channel search left by the traditional collider, where the neutralino as the lightest supersymmetric particle is very degenerated with the next-to-lightest chargino/neutralino.

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Session Classification: Physics at High Energies

Track Classification: PHE