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Connections between colliders and cosmology in the nMSSM

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In a minimal singlet extension of the MSSM, the nMSSM, both the problem of baryogenesis and dark matter can be elegantly solved without large fine-tuning. As a result of these cosmological constraints, the parameter space of the nMSSM is strongly reduced, and the model predicts that a number of new Higgs and supersymmetric particles are within reach of the LHC and ILC. Here the collider phenomenology at the LHC and ILC is analyzed in detail. It is shown that the LHC could make discoveries of sereval new particles, while precision measurements at the ILC would allow to test the role of the nMSSM for the origin of baryonic matter and dark matter. Also prospects for dark matter direct detection and searches for the electron electric dipole moment are presented.

Author: Dr FREITAS, Ayres (University of Zurich)

Co-authors: Prof. WAGNER, Carlos (University of Chicago); Prof. BALAZS, Csaba (Monash University); Dr CARENA, Marcela (Fermilab)

Presenter: Dr FREITAS, Ayres (University of Zurich)

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