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Lightest neutralino in the MNSSM

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In the minimal supersymmetric standard model (MSSM) and Minimal Non-minimal Supersymmetric Standard Model (MNSSM) the lightest neutralino can be absolutely stable providing a good candidate for the cold dark matter component of the Universe. At the same time the \mu problem of the MSSM is solved within MNSSM without accompanying problems related with the appearance of domain walls. In contrast with the MSSM the allowed range of the mass of the lightest neutralino in the MNSSM is limited. We establish the theoretical upper bound on the lightest neutralino mass in the framework of this model. We also obtain an approximate solution for the mass of the corresponding particle. The lightest neutralino is predominantly a singlino so that its couplings to Z boson and other observed particles are suppressed in the considered model.

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