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**Mixed Wino Dark Matter** EUN-KYUNG PARK, HOWARD BAER, AZAR MUSTAFAYEV, STEFANO PROFUMO, Florida State University, DEPARTMENT OF PHYSICS, FLORIDA STATE UNIVERSITY TEAM — In the mSUGRA model, the value of the neutralino relic density is well beyond WMAP. In order to obtain the correct relic abundance of neutralinos, we examine the aspects of DM in the NUGM(Non-Universal Gaugino Mass) case which allows a mixed wino-bino lightest SUSY particle(LSP). In our study, we investigate rates for indirect detection of neutralinos via detection of muons in neutrino telescope, and detect of photons, positrons and anti-protons by balloon and space based detectors. We find the measured wino content of the LSP and reduced mass difference between the lightest neutralinos can have effects on the depletion of relic neutralino density. It means  $\tilde{Z}_2$  two body decay modes are closed so that the mass reconstructions at LHC should be simpler. Finally, we conclude that measurement of the  $\tilde{Z}_2 - \tilde{Z}_1$  mass gap at the CERN LHC and various sparticle masses and cross sections as a function of the electron beam polarization at the ILC(International Linear Collider) will indicate the existence of MWDM(Mixed Wino Dark Matter).

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