SUSY with Non-universal Higgs Masses AZAR MUSTAFAYEV, HOWARD BAER, Florida State University, ALEXANDER BELYAEV, Michigan State University, STEFANO PROFUMO, Florida State University, XERXES TATA, University of Hawaii — In supersymetric models with gravity-mediated SUSY breaking, universality of soft SUSY breaking scalar masses is motivated by the need to suppress unwanted flavor changing or CP violating processes. The motivation, however, does not apply to soft breaking Higgs masses, which may in general have independent masses from matter scalars at the GUT scale. We explore the consequences of both the one-parameter and two-parameter non-universal Higgs mass models (NUHM1 and NUHM2). In both NUHM1 and NUHM2 models, the A-funnel and higgsino dark matter annihilation regions can be realized for any $\tan\beta$ values, unlike the case with the mSUGRA model. We examine the parameter space of NUHM models with respect to $\Omega_{CDM}h^2$, $BF(b \to s\gamma)$ and $(g-2)_\mu$. The most favored regions tend to have a small, positive Higgs mass parameter μ, and a mixed gaugino/higgsino LSP. These regions of parameter space can give rise to observable trilepton rates at the Fermilab Tevatron collider, and robust signal rates at the CERN LHC and a TeV-scale linear e^+e^- collider.

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