

Abstract

This largely technical talk is about the minimal supersymmetric standard model (MSSM) extended by an Abelian gauge invariance. I will discuss need to such an additional symmetry (the $U(1)'$ invariance) and its anomalous structure. Indeed, $U(1)'$ models, also motivated by strings and GUTs, are in general anomalous unless a number of exotics are present in the model.

Such fields, however, disrupt the unification of gauge couplings – an important prediction of the MSSM. I will discuss possibility of canceling anomalies without exotics, and show that this is possible when $U(1)'$ charges are family-dependent, and soft supersymmetry breaking sector is extended by non-holomorphic terms.