

Mixed axion/axino cold dark matter in SUSY models

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Supersymmetric models of particle physics with neutralino dark matter tend to predict too much dark matter (the case of binos) or too little dark matter (case of winos or higgsinos). If instead we solve the strong CP problem via PQ symmetry breaking, we expect dark matter to be composed of an axion/axino mixture. If the PQ breaking scale is high, then the re-heat temperature can be driven high enough to allow for leptogenesis, while solving the gravitino problem.

The model works best if there is a large component of axion DM. In this case, we expect no direct/indirect WIMP signals, but possibly an axion signal, and quite different signatures for SUSY at LHC from conventional scenarios with neutralino DM.

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