

Axino dark matter and baryon number asymmetry from Q-ball decay in gauge mediation

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We investigate the Q-ball decay into the axino dark matter in the gauge-mediated supersymmetry breaking. In our scenario, the Q ball decays mainly into nucleons and partially into axinos to account for the baryon asymmetry and the dark matter of the universe simultaneously. The Q ball decays well before the big bang nucleosynthesis so that it is not affected by the decay. The decay into the supersymmetric particles of the minimal supersymmetric standard model is kinematically prohibited until the very end of the decay, and we could safely make their abundances small enough for the successful big bang nucleosynthesis. We show the regions of axino model parameters and the Q-ball parameters which realize this scenario.

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