

Saturon Dark Matter

Saturons are macroscopic objects with maximal microstate entropy. Due to this property, they can be produced via quantum transitions from a homogeneous thermal bath, bypassing the standard exponential suppression characteristic of ordinary extended objects. In this sense, saturons carry an advantage with respect to other macroscopic objects such as black holes and ordinary solitons. Due to unsuppressed thermal production, saturons can have interesting cosmological implications. In particular they can serve as viable dark matter candidates with some unique features. Unlike ordinary particle dark matter, the superheavy saturons can freeze-in at very low temperatures. A nucleation of a saturon can be described in terms of a saturated instanton. This has implications for various phase transitions.

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