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Big Bounce Baryogenesis

Tuesday 24 March 2020 17:30 (25 minutes)

We explore the possibility of an Ekpyrotic phase induced by a fast rolling pseudoscalar field prior to a non-singular bounce harbouring a mechanism for Baryogenesis. Chern-Simons couplings to the Standard Model Hypercharge and Weak gauge fields enable the generation of a non-zero Chern-Simons number density during the contracting phase. The resulting baryon number produced is found to be consistent with observation for a range of couplings and high bounce scales. The gauge field production may also be a source of gravitational waves and provide the seeds of galactic magnetic fields.

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