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# Generating the Observed Baryon Asymmetry from the Inflaton Field

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We propose a mechanism by which the inflaton can generate baryogenesis, by taking the inflaton to be a complex scalar field with a weakly broken global symmetry and present a new version of the Affleck-Dine mechanism. The smallness of the breaking is motivated both by technical naturalness and a requirement for inflation. We study inflation driven by a quadratic potential for simplicity and discuss generalizations to other potentials. We compute the inflationary dynamics and find that a conserved particle number is obtained towards the end of inflation. We then explain in detail the later decay to baryons. We present two promising embeddings in particle physics: (i) using high dimension operators for a gauge singlet; we find this leads to the observed asymmetry for decay controlled by the ˜GUT scale and this is precisely the regime where the EFT applies. (ii) using a colored inflaton, which requires small couplings. We also point out two observational consequences: a possible large scale dipole in the baryon density, and a striking prediction of isocurvature fluctuations whose amplitude is found to be just below current limits and potentially detectable in future data.

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