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Colour Breaking Baryogenesis

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We propose a new cosmological scenario for the production of the baryon asymmetry of the Universe which exploits a multistep phase transition in which SU(3) color symmetry is fist broken and then restored. Baryon production occurs during the initial transition mainly due to spontaneous breaking of B-L near the phase boundary. The same B-L violation leads to washout far away from the wall. However, as long as the second transition is not first-order and occurs before the total baryon asymmetry is depleted, all washout processes are quenched and some fraction of the baryon asymmetry produced persists as the observed baryon asymmetry of our Universe. We illustrate this mechanism with a simple model that reproduces the observed baryon asymmetry and discuss how certain aspects of such a scenario may potentially be probed by future electric dipole moment and collider searches.

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