

Status and prospect of theories on the origin of matter-antimatter asymmetry in the universe

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The origin of the matter antimatter asymmetry of the universe remains unexplained in the Standard Model of particle physics. The origin of the flavour structure is another major puzzle of the theory. In this talk, we report on recent work attempting to link the two themes through the appealing framework of electroweak baryogenesis. We show that Yukawa couplings of Standard Model fermions can be the source of CP-violation for electroweak baryogenesis if they vary at the same time as the Higgs is acquiring its vacuum expectation value, offering new avenues for electroweak baryogenesis. The advantage of this approach is that it circumvents the usual severe bounds from Electric Dipole moments. These ideas apply if the mechanism explaining the flavour structure of the Standard Model is connected to electroweak symmetry breaking, as motivated for instance in Composite Higgs models.

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