

## EW phase transition and Baryogenesis

*Saturday 29 August 2015 09:00 (30 minutes)*

In this talk, I will first give a heuristic sketch of the intrinsic connection between electroweak baryogenesis & Higgs physics, based on the fact that baryon asymmetry and elementary particle masses are generated simultaneously during the strongly 1st order phase transition. For the strongly 1st order EW phase transition, I will use a super master formula to demonstrate that either it requires new particles strongly coupled to the Higgs or tuning of the Higgs potential to be shallow. In each case, I will give several popular examples and comment on their current situation based on the new LHC data. The CP violation, on the other hand, requires an imaginary part of the amplitude in the Higgs production and decay, therefore can affect both the Higgs global fits (total amplitude) and direct Higgs CP violation searches (phases). The low energy electric dipole moment (EDM) constraint on Higgs CP violation is also discussed and a general cancellation mechanism will be introduced. The current interplay between LHC Higgs CP physics and EDM experiments, together with the future collider Higgs CP measurements and projected future EDM experiments will be mentioned at the end of the talk.

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