

A strong first order electroweak phase transition from varying yukawas at the weak scale

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I will discuss, in a model-independent way, how the nature of the electroweak phase transition is completely changed when the Standard Model Yukawas vary at the same time as the Higgs is acquiring its vacuum expectation value. (Large Yukawas before the electroweak phase transition also give an unsuppressed source of CP violation, see abstract/talk by Sebastian Bruggisser.) The thermal contribution of the fermions creates a barrier between the symmetric and broken phase minima of the effective potential, leading to a first-order phase transition. This offers new routes for generating the baryon asymmetry at the electroweak scale, strongly tied to flavour models. There are good motivations to consider that the flavour structure could emerge during electroweak symmetry breaking, for example if the Froggatt-Nielsen field dynamics were linked to the Higgs field.

Summary

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