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Composite Dynamics in the Early Universe

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We study the occurrence of a strong first-order electroweak phase transition in composite Higgs models. Minimal constructions realising this scenario are based on the coset SO(6)/SO(5) which delivers an extended Higgs sector with an additional scalar. In such models, a two-step phase transition can be obtained with the scalar singlet acquiring a vacuum expectation value at intermediate temperatures. A bonus of the Nambu-Goldstone boson nature of the scalar-sector dynamics is the presence of non-renormalisable Higgs interactions that can trigger additional sources of CP violation needed to realise baryogenesis at the electroweak scale. Another interesting aspect of this scenario is the generation of gravitational wave signatures that can be observed at future space-based interferometers.

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