

Scale invariance: super-cooling and Dark Matter (talk shared with S.Iso)

If the electroweak sector of the Standard Model is described by classically conformal dynamics, the early Universe evolution can be substantially altered. In particular, one generically has a significant period of super-cooling, often ended when quark condensates form at the QCD phase transition. This scenario is potentially rich in cosmological consequences, such as renewed possibilities for electroweak baryogenesis and gravitational-wave production. In the second part of the talk we will focus on Super-cool Dark Matter, a new mechanism of generation of the cosmological Dark-Matter relic density: super-cooling can easily suppress the amount of Dark Matter down to the desired level. This mechanism generically takes place in old and new scale-invariant models.

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