Contribution ID: **734** Type: **Poster**

Probing intermediate scale Froggatt-Nielsen models at future gravitational wave observatories

The flavor symmetry-breaking scale in the Froggatt-Nielsen (FN) mechanism is very weakly constrained by present experiments and can lie anywhere between a few TeVs and the Planck scale. We construct two ultraviolet-complete models that generate the FN mechanism, with a global $U(1)_{\rm FN}$ flavor symmetry and a single flavon field. Using the one-loop finite temperature effective potential, we explore the possibility of a strong first-order phase transition (SFOPT) induced by the flavon. We show that if the flavor symmetry-breaking occurs at intermediate scales ~ 10^4 – 10^7 GeV, then in certain regions of the parameter space, the associated stochastic gravitational wave (GW) background is strong enough to be detected by second-generation GW observatories such as the Big Bang Observer (BBO), the Deci-hertz interferometer Gravitational Observatory (DECIGO), the Cosmic Explorer (CE) and the Einstein Telescope (ET). We identify viable regions of the parameter space for the best detection prospects. While both models of flavor can produce a detectable GW background, the GW signature does not discriminate between them.

Collaboration / Activity

Gravitational waves

Primary author: Mr RINGE, Dhruv (Indian Institute of Technology Indore)

Presenter: Mr RINGE, Dhruv (Indian Institute of Technology Indore)

Session Classification: Poster session

Track Classification: Astroparticle Physics and Gravitational Waves