Contribution ID: **153** Type: **Parallel talk**

Constraints on leptophobic models and dark matter from gravitational waves to colliders

Wednesday 16 October 2024 14:30 (15 minutes)

A minimally extended version of the Standard Model where baryon number is promoted as a gauged $U(1)_B$ symmetry can be made anomaly-free by adding a set of vector-like fermions. Such a scenario can evade the spin-dependent direct detection bounds on vector-like fermions. Additionally, the lightest component of the exotic fermion sector behaves as a viable dark matter candidate. We show that the spontaneous breaking of $U(1)_B$ symmetry can produce gravitational waves via bubble dynamics resulting from a first-order phase transition, which can be detected in future gravitational wave experiments like LISA and DECIGO. Such gravitational wave signatures can be used as a probe to constrain the model in future observations. We show that dark matter relic density can have one-to-one correspondence with the frequency of the gravitational waves.

Track type

Gravitational waves

Author: Ms GURUWANI, Taramati (IIT Bhilai)

Co-authors: Ms MALHOTRA, Lekhika (IIT Bombay); Dr PATRA, Sudhanwa (IIT Bhilai); BORBORUAH, Zafri A. (IIT Bombay)

Presenter: Ms GURUWANI, Taramati (IIT Bhilai)

Session Classification: Parallel - ASP & GW