

Stochastic gravitational wave background: birth from axionic string-wall death

Saturday, 23 September 2023 19:40 (20 minutes)

This talk is based on the paper arXiv: 2307.08185. I will introduce a new source of stochastic gravitational wave background (SGWB) from the final collapse of a string-wall network. In the context of $N_{\text{DW}} = 1$ axionic string-wall network, the final collapse of walls bounded by strings can release gravitational waves (GWs). This source is typically considered negligible due to its subdominance compared to GW emissions throughout the longterm evolution in the scaling regime. However, in some cases, a network can be driven outside of horizon by inflation and later re-enter horizon. Then, the network's final collapse after re-entering horizon becomes the dominant GW source and therefore cannot be neglected. The calculation of the corresponding GW spectrum suggests it could potentially explain the nano-Hertz SGWB signal that has been possibly detected by various Pulsar Timing Array experiments. In addition, with different parameter choices, the resultant GWs could be probed by various GW interferometry experiments.

Primary author: GE, Shuailiang (Peking University)

Presenter: GE, Shuailiang (Peking University)

Session Classification: Parallel 2