## **Revisiting Metastable Cosmic String Breaking**

Thursday, August 22, 2024 5:00 PM (30 minutes)

Metastable cosmic strings are gathering attention as potential progenitors of stochastic gravitational wave background. They result from a two-step symmetry breaking  $G \to H \to 1$  with  $\pi_1(H) \neq 0$  and  $\pi_1(G) = 0$ , and decay via internal monopole-antimonopole pair creation.

Conventionally, the breaking rate has been estimated by an infinitely thin string approximation, which requires a large hierarchy between the symmetry breaking scales.

We numerically constructed a tunneling path and thus obtained a robust lower limit on the tunneling factor  $e^{-S}$  even for mild scale hierarchy. In particular, it is relevant to the cosmic string interpretation of the gravitational wave signals recently reported by pulsar timing array experiments.

**Primary authors:** CHITOSE, Akifumi (ICRR, the University of Tokyo); WATANABE, Keiichi (ICRR, U. Tokyo); IBE, Masahiro (ICRR, The University of Tokyo); SHIRAI, Satoshi (Kavli IPMU); NAKAYAMA, Yuhei (ICRR, U. Tokyo)

Presenter: CHITOSE, Akifumi (ICRR, the University of Tokyo)