

$B \rightarrow K + \nu\bar{\nu}$ Excess and Dark Matter Semi-Annihilation

Sunday, 26 April 2026 11:50 (25 minutes)

In 2023, Belle II collaboration announced the observation of the $B \rightarrow K + \nu\bar{\nu}$ decay channel for the first time. This decay channel provides a clean signal with high precision in theoretical calculation. However, we encounter 2.8σ deviation from the Standard Model prediction. To resolve this excess, we study scalar dark matter model with local discrete $Z_3 \times Z_3$ symmetry. Considering dark Higgs mass is 2GeV , we can explain the recent $\text{Br}(B \rightarrow K \nu\bar{\nu})$ excess reported from Belle II collaboration and relic abundance at the same time.

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Session Classification: Session 6