Contribution ID: **33** Type: **not specified**

Examining Mass Enhancement in a High-Quality Composite Axion Model

Thursday 13 November 2025 14:40 (20 minutes)

The Peccei–Quinn (PQ) mechanism is a prominent solution to the strong CP problem. However, it faces the axion quality problem: higher-dimensional, Planck-suppressed operators which explicitly break PQ symmetry can reintroduce the effective QCD theta angle. In composite axion models, where strong dynamics at high energies dynamically break PQ symmetry, certain constructions address this quality problem. In some cases, hidden interactions distinct from QCD appear to contribute to the axion mass through instanton effects. I demonstrate that while these small instantons enhance the axion mass in a toy model, they do not contribute to the axion mass in an explicit model which addresses the quality problem.

Presenter: AOKI, Takafumi

Session Classification: Parallel session - Theory II