



Contribution ID: 29

Type: **not specified**

Strongly Coupled Qubit-Cavity System Simulations for Broadband Dark Matter Search

This presentation discusses strategies to broaden the tuning range of such a cavity tuning system. This improvement is crucial for expanding the mass search range for dark matter. We report on the progress of a cavity haloscope with galvanically contacted transmon qubits. This approach is designed to achieve a strong qubit-cavity coupling regime, which is expected to enable a GHz-scale frequency tuning range.

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Session Classification: Contributed Talks