Contribution ID: **99** Type: **not specified**

A sub-quantum-limited axion search with the HAYSTAC experiment

Thursday, 28 January 2021 16:00 (45 minutes)

The Haloscope at Yale Sensitive to Axion Cold dark matter (HAYSTAC) is the first dark matter detector to have employed quantum squeezed states to reduce the noise background to below the standard quantum limit. We have now increased the rate at which we can scan axion parameter space two-fold. The squeezed state receiver is composed of two Josephson parametric amplifiers operating in a phase-sensitive mode. In this mode, the noise is "squeezed," while the axion-sensitive signal is amplified. The use of this technology brings together the fields of quantum metrology and axion dark matter in an unprecedented way. In this talk, I will give an overview of the operations of Phase 2 of the HAYSTAC experiment, and present the new results covering 4.11 - 4.18 GHz.

Presenter: BACKES, Kelly