Contribution ID: **24** Type: **Talk**

The QUAntum LImited PHotons In the Dark Experiment with far infrared photon counting

Thursday 27 March 2025 14:05 (15 minutes)

QUAntum LImited PHotons In the Dark Experiment (QUALIPHIDE) utilizes novel receivers and detectors operating in the microwave to far infrared to search of Hidden Photons (HP). Searches with quantum sensing techniques enables exploring new phase space for both HPs and axion like particles as candidates for dark matter. The first version of QUALIPHIDE was done in the microwave with traveling wave parametric amplifiers. Now, we are pursuing deeper than standard quantum limit searches with photon counting. This new iteration of QUALIPHIDE will operate in 8-16 THz (˜50 meV hidden photon masses), with expected sensitivity of kinetic mixing
$gtrsim 10^{-12}$. The sensors will be the focus, as we enable their reach with mHz dark count rates, and eventually towards ˜1 THz.

Authors: Mr ALBERT, Chris (Caltech); RAMANATHAN, Karthik; BASU THAKUR, Ritoban

Presenter: BASU THAKUR, Ritoban

Session Classification: SESSION 17: Direct detection Recent Developments II & New Concepts