

DPF-PHENO 2024

Contribution ID: 702

Type: **not specified**

Quantum Sensing for Fundamental Physics

Tuesday 14 May 2024 14:00 (30 minutes)

Quantum sensing employs a rich arsenal of techniques, such as squeezing, photon counting, and entanglement assistance, to achieve unprecedented levels of sensitivity in various tasks, with wide-reaching applications in fields of fundamental physics. For instance, squeezing has been utilized to enhance the sensitivity of gravitational wave detection and expedite the hunt for exotic dark matter candidates. In this talk, I will dive into the various quantum strategies aimed at accelerating the search for weak signals and explore initial approaches to transcend *Standard Quantum Limits* en route to achieving the ultimate limits of measurement sensitivity set by quantum mechanics. Along the way, I will underscore the important roles that distributed quantum sensing and entanglement can have in pushing the limits of our sensing capabilities.

Plenary (Invited talks only)**Mini Symposia (Invited Talks Only)****Presenter:** BRADY, Anthony (University of Southern California)**Session Classification:** Minisymposium