



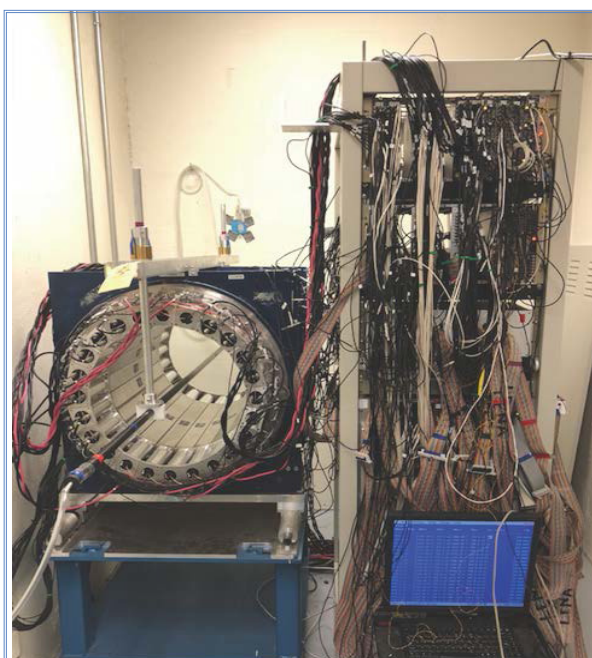
Wright
Laboratory

Chelsea Bartram

University of Washington, Seattle

Thursday, October 3, 2019 at 1:00 p.m. in WL-216

The Unexpected World of Discrete Fundamental Symmetries, from Positronium to Axions



The history of discrete fundamental symmetries in nuclear physics is riddled with surprises. From the discovery of parity violation in weak interactions, to the unresolved mystery of the Strong CP problem, the topic of fundamental symmetries has often deeded our expectations and opened doors to new physics. The CALIOPE experiment is one example of a search for new physics using fundamental symmetries. The CALIOPE setup was used to search for CPT-violation in ortho-positronium (o-Ps) in August of 2018. Using a cylindrical array of 24 NaI(Tl) bars with 75% angular coverage, CALIOPE looked for angular correlations in the decay of o-Ps. This experiment can be modied to search for CP-violation in the lepton sector, which is strongly motivated by the matter-antimatter asymmetry. Finally, the mystery of the Strong CP-problem persists and the PQ mechanism presents one possible solution in the form of a particle called the axion. The ADMX experiment is searching for the axion at the level of DFSZ sensitivity. Fundamental symmetries are a thread that connects a variety of related concepts in nuclear physics and provide a promising route to understanding physics beyond the Standard Model.

Host: Pranava Teja Surukuchi

Lunch in WLC-245 at 12:00 noon. RSVP: <https://forms.gle/hEEvKvkgEyoZFcDVA>

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