



ID de Contribution: 71

Type: Non spécifié

## The PADME Run III analysis result. Marco Mancini

jeudi 18 septembre 2025 17:00 (10 minutes)

The PADME experiment, designed to investigate potential signatures of physics beyond the Standard Model, has conducted a resonant search for a hypothetical X17 particle, potentially linked to the anomaly observed at ATOMKI. During Run III, PADME employed a positron beam impinging on a fixed diamond target to explore resonant electron-positron annihilation processes near 17 MeV, where the new particle is expected to be, aiming to identify deviations in two-body final state yields. The analysis strategy involved comparing observed yields with expected background through Monte Carlo simulations and data-driven techniques. Systematic uncertainties were carefully evaluated, accounting for beam parameters, target thickness and detector efficiencies. A likelihood-based statistical framework, incorporating nuisance parameters, was used to estimate upper limits on coupling strength under the assumption of a signal-plus-background or background-only hypothesis. While no significant excess indicative of new physics was observed, the sensitivity achieved places meaningful constraints on the viable parameter space for the X17 hypothesis.

**Classification de Session:** Students presentations