



Contribution ID: 309

Type: Poster

## **【464】 Stable High Power deep-UV Enhancement Cavity for Muonium Precision Spectroscopy**

*Tuesday, 31 August 2021 19:17 (1 minute)*

We have built an enhancement cavity able to sustain 20 watts of intracavity power in the deep-UV range (244 nanometer) on several hour time scales, in a vacuum chamber designed for muonium 1S-2S precision spectroscopy. These performance are reached when fluoride coated mirrors are in a low oxygen pressure environment ( $10^{-3}$  millibar), meanwhile in higher vacuum ( $10^{-8}$  millibar) up to 10 watts can stably be observed on one hour timescale. We demonstrate the superior performance of fluoride versus oxide coated mirrors on long term operation, with degradation being partially recoverable through the use of oxygen. Fluoride coatings display enhanced performance after initial conditioning with UV in an oxygen rich environment.

**Primary authors:** Dr BURKLEY, Zakary (ETH Zürich, Institute for Particle Physics and Astrophysics); DE SOUSA BORGES, Lucas (ETH Zürich, Institute for Particle Physics and Astrophysics); Dr OHAYON, Ben (ETH Zürich, Institute for Particle Physics and Astrophysics); Dr GOLOVOZIN, Artem (Lebedev Physical Institute, Moscow, Russia); ZHANG, Jesse (ETH Zürich, Institute for Particle Physics and Astrophysics); Prof. CRIVELLI, Paolo (ETH Zürich, Institute for Particle Physics and Astrophysics)

**Presenter:** DE SOUSA BORGES, Lucas (ETH Zürich, Institute for Particle Physics and Astrophysics)

**Session Classification:** Poster Session

**Track Classification:** Atomic Physics and Quantum Optics