



Contribution ID: 523

Type: **Parallel**

The X17 search at the MEG II experiment

The MEG II experiment at the Paul Scherrer Institute primarily aims to search for Physics beyond the Standard Model through the investigation of charged lepton flavor violation in the $\mu^+ \rightarrow e^+ \gamma$ process. However, it is also capable of searching for new particles.

We present a search for the X17, a hypothetical particle proposed to explain a resonant structure observed at ATOMKI in the opening angle of the electron-positron pairs, produced following the excitation of nuclei such as ^8Be , ^4He and ^{12}C by proton beams.

MEG-II has a CW accelerator that delivers protons with a kinetic energy up to 1.1 MeV. These protons impinge on a Li-based target, inducing nuclear transitions that produce photons used for the calibration of the Xenon calorimeter in the MEG-II detector.

By using dedicated targets (with thicknesses up to several μm) the $^7\text{Li}(p, e^+ e^-)^8\text{Be}$ process is being studied with a magnetic spectrometer including a cylindrical drift chamber and a system of fast scintillators. This aims to achieve a higher resolution than previous experiments and to study X17 production with greater acceptance, thereby providing deeper insight into the nature of this observation.

The results of the first four-weeks data-taking run conducted in 2023 and future prospects will be presented.

Secondary track

Author: Prof. CECILIA, Voena (Sapienza Università di Roma & INFN)

Session Classification: T09

Track Classification: T09 - Beyond the Standard Model