Contribution ID: 191

## The LaBr3-based detection setup for the FAMU experiment at RIKEN-RAL

Monday, 27 May 2024 15:37 (1 minute)

The FAMU experiment (Fisica degli Atomi MUonici), led by INFN at the Rutherford Appleton Laboratory (UK), is designed to measure the Zemach radius of the proton in muonic hydrogen ( $\mu$ H) with 1% relative uncertainty. A 55 MeV/c negative muon beam is produced by the ISIS synchrotron at the RIKEN-RAL muon facility. The beam is directed against a gaseous hydrogen-oxygen target, where a pulsed custom-made Mid-InfraRed (MIR) laser with a tunable wavelength around 6.8  $\mu$ m is also injected. The aim is to determine the laser wavelength that stimulates the resonant spin-flip in  $\mu$ H atoms, which is a function of the proton Zemach radius. The experiment has started data collection in 2023. A set of LaBr3 scintillating crystals, supported by a HPGe detector, are used to detect the delayed muonic oxygen radiation, which marks the transition. The detector setup is in continuous development. In particular, the detector configuration is currently being upgraded with new detectors read by SiPMs to enhance signal-to-noise ratio and improve time performance.

## Collaboration

FAMU

## **Role of Submitter**

I am the presenter

Primary author:ROSSINI, Riccardo (INFN - Pavia)Presenter:ROSSINI, Riccardo (INFN - Pavia)Session Classification:Integration and Detector Systems - Poster session

Track Classification: T8 - Integration and Detector Systems