38th INTERNATIONAL CONFERENCE
ON HIGH ENERGY PHYSICS
AUGUST 3 - 10, 2016
CHICAGO

Contribution ID: **1344** Type: **Oral Presentation**

The Mu3e Experiment at PSI (10' + 5')

Friday, 5 August 2016 10:25 (15 minutes)

The Mu3e experiment will search for the lepton flavor violating neutrinoless muon decay $\mu^+ \to e^+e^-e^+$ with a sensitivity down to 10^{-16} (90 % C.L.),
i.e. a four order of magnitude improvement over previous measurements,
using the world most intense muon beam at the Paul Scherrer Institute.
This decay is strongly suppressed in the Standard Model,
whilst several Beyond the SM models predict observable effects accessible
to the new generation of LFV experiments.

The search for the $\mu^+ \to e^+e^-e^+$ decay requires a large
acceptance detector capable of coping with rates of up to 2×10^9
stopped muons per second with excellent momentum, spacial, and time resolution
to suppress backgrounds below the 10^{16} level. The required Mu3e detector
performance is possible thanks to tracking detectors based on thin monolithic
active silicon pixel sensors (HV-MAPS) in conjunction with an innovative
tracking concept and very precise timing measurements using scintillating
fibers and tiles coupled to silicon photo-multipliers. The first phase of the
Mu3e exeriment aiming to a sensitivity of 10^{-15} has been recently approved.
Following the R&D phase, the collaboration is currently preparing for detector
construction. First data taking is expected in 2017.

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Session Classification: Quark and Lepton Flavor Physics

Track Classification: Quark and Lepton Flavor Physics