

Searching for physics beyond the Standard model with the MEG II experiment at PSI

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The MEG experiment at Paul Scherrer Institut (Zurich –Switzerland) established in 2016 the best current upper limit of 4.2×10^{-13} on the branching ratio of the $\mu^- \rightarrow e\gamma$ decay. The search for this decay represents an extremely powerful tool to look for possible extensions of the Standard Model since its existence would unambiguously represent a sign of new physics.

To further enhance sensitivity by one order of magnitude, an upgraded apparatus (MEG II) was conceived and constructed in subsequent years.

Following an engineering run in 2020 with a reduced set of electronic channels, MEG II commenced physics data acquisition in the summer of 2021 and is currently in operation. An overview of the sub-detectors' performances and of the analysis status will be presented. MEG II aims to continue data taking until 2026, striving to achieve its ultimate goal.

This talk will further highlight the status and perspectives of MEG II searches for other exotic phenomena, including the exploration of a potential 17.6 MeV particle originating from the ${}^7\text{Li}(p, \gamma){}^7\text{Be}$ reaction.

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