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VUV-sensitive MPPC used in the liquid xenon detector for the MEG II experiment

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The MEG II experiment searches for new physics like SUSY-GUT/SUSY-seesaw through the lepton flavor violating mu+ -> e+ gamma decay with ten times better sensitivity than the MEG experiment. The MEG experiment published the result of B(mu+ -> e+ gamma)<4.2x10-13 at 90% CL. in 2016, which was thirty times better result than the previous limit. While the MEG experiment utilized 846 2inch PMTs to detect scintillation light in 900L liquid xenon gamma calorimeter, 216 2inch PMTs on the gamma incident face are replaced with 4092 VUV-sensitive MPPCs (SiPMs produced by Hamamatsu) in the MEG II experiment to improve energy and position resolutions. We have started the physics data taking in 2021, and the first results were published in 2023. Here the LXe detector status including initial photon sensor calibration and performance will be summarized together with the current experimental status and the latest results. The PDE decrease of the SiPM observed in the high rate muon beam environment and our possible solution (annealing method) will also be discussed.

Do you need a VISA letter for traveling to Canada ?

No

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