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Light-only Liquid Xenon (LoLX) Experiment for Cherenkov and Scintillation Light

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The Light-only Liquid Xenon (LoLX) experiment has been developed to study the properties of light emission and transport in liquid xenon (LXe) using 96 Hamamatsu VUV4 SiPM modules. LoLX is also being used to investigate the timing structures of scintillation and Cherenkov light production in LXe and provide a better understanding of the effects of external cross-talk between neighbouring SiPM modules. An update of LoLX is being planned to investigate the long-term stability and performance of the Hamamatsu VUV4 SiPMs in LXe environment as well as measure the performance of FBK VUV-HD3 SiPMs. Such studies of cross-talk and validation of photon transport simulations are important for low background LXe experiments such as nEXO that will search for the neutrino-less double beta ($0\nu\beta\beta$) decay of Xe-136. To detect a $0\nu\beta\beta$ decay signal, nEXO will use SiPMs to register the LXe scintillation light and a segmented anode to measure ionization electrons. In this talk, I will present the status of LoLX as well as preliminary results and discuss future plans of the LoLX collaboration.

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