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Cryogenic readout for multiple VUV4 Multi-Pixel Photon Counters in liquid xenon

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We present the performances and characterization of an array made of S13370-3050CN (VUV4 generation) Multi-Pixel Photon Counters manufactured by Hamamatsu and equipped with a low power consumption preamplifier for operations in liquid xenon environment. The electronics is designed for the readout of a 8×8 matrix of individual photosensors and it is based on a single operational amplifier (Analog Devices AD8011). A biasing correction circuit has been implemented for the gain equalization of photosensors operating at different voltages. We present the results of the characterization which show a distinct single photon detection capability that makes this device a promising choice for future generation of large scale dark matter detectors based on liquid xenon.

Primary authors: Dr DI GIOVANNI, Adriano (NYUAD); Prof. ARNEODO, Francesco (NYUAD); Dr FRANCHI, Giovanni (age scientific srl); Prof. BENABDERRAHMANE, Mohamed Lotfi (NYUAD)

Co-authors: Dr CANDELA, Attanasio (LNGS); Dr MESSINA, Marcello (NYUAD); Dr FAWWAZ, Osama (NYUAD); Mr CONICELLA, Valerio (NYUAD)

Presenter: Dr DI GIOVANNI, Adriano (NYUAD)

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