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X-ARAPUCA long term test

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The photon detection system of the DUNE experiment is based on the X-ARAPUCA light trap. The basic constituents of the X-ARAPUCA are: dichroic filters coated with wavelength shifter (para-Terphenyl), a waveshifting plate and an array of SiPMs which detects the trapped photons. A small scale prototype of the X-ARAPUCA has been installed in LAr in a dedicated facility at INFN-Napoli and exposed to alpha, gamma particles and cosmic muons. In order to stress mechanically the optical components (the thin para-Terphenyl layer and the wave shifting plate) few thermal cycles from room to liquid argon temperature were performed. The overall stability of the device was monitored by measuring its detection efficiency on a daily basis.

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