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Study of the Radiation-Hardness of VCSEL/PIN

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We investigate the feasibility of using VCSEL and PIN arrays in the optical links for the planned upgrades of the detectors at the LHC, CERN. We irradiated high-speed VCSEL (Vertical-Cavity Surface-Emitting Laser) and PIN arrays with 24 GeV/c protons at CERN and 300 MeV/c pions at PSI up to the equivalent dose of a few 10^{15} 1-MeV neq/cm². The arrays irradiated were fabricated by Finisar, Optowell, and ULM Photonics. The irradiation using two species of particles allows us to test the hypothesis that the damage is proportional to the non-ionizing energy loss (NIEL) in a device. The results from the irradiations will be presented.

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