Contribution ID: **307** Type: **Parallel session talk**

Radiation Tolerance of Diamond Detectors

Wednesday 26 May 2021 08:06 (18 minutes)

As nuclear and particle physics facilities move to higher intensities, the detectors used there must be more radiation tolerant. Diamond is in use at many facilities due to its inherent radiation tolerance and ease of use. We will present radiation tolerance measurements of the highest quality poly-crystalline Chemical Vapor Deposition (pCVD) diamond material for irradiations from a range of proton energies, pions and neutrons up to a fluence of 2 x 10ˆ16 particles/cmˆ2. We have measured the damage constants as a function of energy and particle species and compare with theoretical models. We also present measurements of the rate dependence of pulse height for non-irradiated and irradiated pCVD diamond pad and pixel detectors, including detectors tested over a range of particle fluxes up to 20 MHz/cm2 with both pad and pixel readout electronics. Our results indicate the pulse height of unirradiated and neutron irradiated pCVD diamond detectors is not dependent on the particle flux.

TIPP2020 abstract resubmission?

Yes, this would have been presented at TIPP2020.

Funding information

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