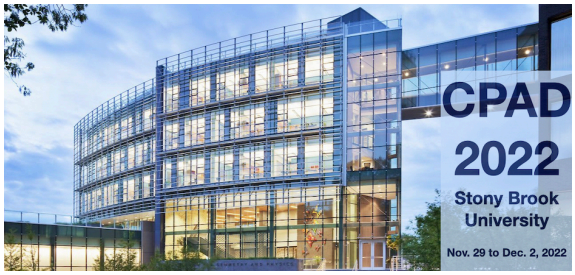

Contribution ID: **2** Type: **Contribution Talk**

Use of Diamond Sensors for High Radiation, Flux and Repetition Rate Applications

Thursday, December 1, 2022 8:30 AM (20 minutes)

Funded by its Office of the President, a consortium of University of California affiliated institutions has been exploring the use of electronic-grade diamond sensors for applications in extreme environments, including settings involving high fluences of hadronic particles (in excess of 10^16 Neq/cm^2), high instantaneous flux (approaching 100 J / cm^2 of deposited energy) and/or high repetition rate (approaching 10 GHz). Results are presented on the rate and efficiency of charge collection as a function of the electron-hole plasma density induced by the XPP beamline X-Ray laser beam at SLAC's LCLS. Additional studies on the intensity and position resolution of the XPP beam with a quadrant sensor capable of running at 50 MHz are also presented. Finally the results of a real-time charge-collection degradation study, performed at the Crocker Nuclear Laboratory on the UC Davis campus, for a hadronic fluence reaching 4x10^16 protons per cm^2, are presented.

Primary author: NIZAM, M (University of California Santa Cruz)

Co-authors: GONZALEZ, E (SCIPP, UCSC); KACHIGUINE, S (SCIPP, UCSC); MARTINEZ-MCKINNEY, F (SCIPP, UCSC); Dr MAZZA, S (SCIPP, UCSC); NORVELL, N (SCIPP, UCSC); PADILLA, R (SCIPP, UCSC); POTTER, E (SCIPP, UCSC); RYAN, E (SCIPP, UCSC); Prof. SCHUMM, B (SCIPP, UCSC); TARKA, M (SCIPP, UCSC); WILDER, M (SCIPP, UCSC); JACOBSON, B (SLAC National Accelerator Laboratory); MACARTHUR, J (SLAC National Accelerator Laboratory); SILVA TORRECILLA, I (SLAC National Accelerator Laboratory); BOHON, J (Los Alamos National Laboratory); GRACE, C (Lawrence Berkeley National Laboratory); HARRIS, C.T (Sandia National Laboratory); PRAKASH, T (Lawrence Berkeley National Laboratory); PREBYS, E (University of California, Davis); STUART, D (University of California, Santa Barbara)

Presenter: NIZAM, M (University of California Santa Cruz)

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