Diamond detectors for relativistic heavy ions

Professor Andreas Stolz

NSCL, Michigan State University, E-Lansing, MI

Abstract

The newest generation of rare isotope facilities can produce radioactive heavy ions beams with intensities that exceed the capabilities of conventional particle detectors. The outstanding properties of diamond allow the development of particle detectors with very fast detector response and excellent radiation hardness. Detectors based on chemical vapor deposition (CVD) diamond have been developed at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University. Sub-nanosecond signal rise times lead to an excellent time resolution for timing and tracking detectors. Such detectors have been used at NSCL in nuclear physics experiments with count rates exceeding 10^7 particles per second.