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A beam radiation monitor based on CVD diamonds for SUPERB

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CVD diamond particle detectors are presently in use in the CERN experiments ATLAS, CMS, LHCb and ALICE and at particle accelerator laboratories in USA and Japan. This is a proven technology with very fast signal read-out and a very high radiation tolerance suitable for measurements in high radiation environment zones.

The properties of CVD diamonds make them a prime candidate for measuring single particles as well as high-intensity particle cascades, for timing measurements on the nanosecond scale and for beam protection systems in hostile environments like regions near the beam pipe.

A Polycrystalline CVD and a single-crystalline CVD diamond sensors, read out with a new generation of fast and high bandwidth SiGe bipolar transistor amplifiers, have been tested for possible applications as radiation monitor and as luminometer for the Super-B project.

Test results with 5.5 MeV alpha particles from a ^{241}Am radioactive source and from electrons from a ^{90}Sr radioactive source are presented.

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