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A Prototype of Beam Loss Monitoring Detector based on CVD diamond for the NSRL

In past years, BLM systems have been designed and implemented for the Shanghai Synchrotron Radiation Facility (SSRF) and the National Synchrotron Radiation Laboratory. The Bergoz BLM detector and direct-readout Si-PIN BLM detector were mixed used in the BLM systems, for different monitoring purpose of the linac, the booster and the storage ring. Si-PIN detector is excellent as it can get accurate information of beam loss position, and it is adaptive for the pulse radiation field around the linac and the transportation line which has a very small duty factor. But it encountered the problem of radiation damage. A new prototype of CVD diamond based BLM detector has been designed and under evaluation for the upgrade of those existing BLM systems, which can work in either pulse counting mode for fast monitoring, or in charge measurement mode for slow monitoring, the design and preliminary result at the NSRL will be introduced in this paper.

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