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The status of beam loss diagnostics system for the SKIF synchrotron light source

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The Siberian Ring Photon Source (SKIF) is a fourth-generation synchrotron light source that operates at a beam energy of 3 GeV. In order to ensure the reliable operation of the accelerator, a beam loss diagnostics system will be implemented. For the linear accelerator, linac-to-booster and booster-to-storage ring transfer lines, fiber-based Cherenkov beam loss sensors will be used. Multi-mode quartz fibers and photo multiplier tubes (PMTs) will provide spatial resolution for this diagnostic system at a level of about 1 meter. The storage ring will be equipped with 128 scintillation-based detectors with acquisition electronics that are placed around the circumference of the ring. These detectors will be able to measure beam losses both during beam injection and during regular SKIF operations for SR users. Since SKIF will operate in different working modes, the BLMs system will require high sensitivity, a large dynamic range, and sophisticated electronics. The paper describes the design of both types of beam loss monitors (BLMs) and the choice of their positioning around the storage ring. It also discusses the final design of the acquisition electronics, the tests of the BLMs and the current status of diagnostics.

Footnotes

Funding Agency

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Yes

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