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Silica fiber Cherenkov radiation monitor to study transverse beam tails in storage ring

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We propose a new diagnostic tool to study transverse beam distribution in accelerator especially the regions with low particle population (beam halo, non-gaussian tails, etc.). The monitor key element is a silica fiber which scans the beam transversely. Beam particles hit the fiber and produce Cherenkov radiation which propagates along the fiber, moves out of the vacuum chamber through the glass windows and is registered by two photomultipliers. The monitor prototype was designed and installed at the VEPP-4M storage ring. First experiments with e+/e- beams have proved applicability and efficiency of this monitor.

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