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System for monitoring position of the photon beam in the new undulator at SEC

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For an undulator beamline the ability to monitor the position of the source in the insertion device and the angle of the photon beam relative to the device's axis is very important for achieving the optimum performance of the beamline monochromator. A system for monitoring the photon beam as it enters the monochromator was developed for the new Plane Grating Monochromator (PGM) undulator beamline at the Synchrotron Radiation Center (SRC). It consists of two sets of beam position monitors. The first set is located upstream of the first vertical focusing mirror. The second is placed after the entrance slit of the monochromator. Each set consists of several vertical molybdenum blades protruding towards the photon beam axis from above and below the beam. The monitors provide the capability of measuring horizontal position of the source. In addition, the jaws of the entrance slit are used as monitors to detect changes in the vertical position of the source. Overall, the system allows measurements of the photon beam position and angle to be done with ~ 10 μm and ~ 3 μrad accuracy, respectively. Tests of the system and first measurements of the stability of the undulator beam will be reported.