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Scatter Radiation Production in First Optical Enclosure of 6-BM Beamline at National Synchrotron Light Source-II[1] JUSTICE STEWART, GIRAUDE GRIFFIN, Texas Southern University, DALE KELLY, Rensselaer Polytechnic Institute, MARK HARVEY, Texas Southern University, STEVE COLEMAN, Brookhaven National Laboratory — The National Synchrotron Light Source-II (NSLS-II) at Brookhaven National Laboratory produces synchrotron radiation of ultra-high brightness for high spatial and energy resolution x-ray diffraction experiments. Two major types of radiation studied at NSLS-II are synchrotron radiation (SR) and gas bremsstrahlung (GB). X-ray diffraction experiments are carried out with SR, while GB inside the storage ring is due to beam gas interactions. Only calculations of the scatter dose rate have been performed with FLUKA for beamlines at NSLS-II to ensure personnel safety on the experimental floor. The purpose of this study was to measure the scatter radiation produced inside the first optical enclosure (FOE) of the 6-BM beamline near viewports of the double crystal monochromator (DCM) for the first time. The DCM viewports in 6-BM were observed to yield the highest scatter dose rates within the FOE. Measurements of the scatter radiation were performed with the FH 40 G dose rate meter and Mirion InSpector^{TM} 1000 gamma spectrometer. Preliminary results showed that the gamma dose rate varied inversely with DCM crystal angle from 3.7 mSv/h ($\theta = 24^0$) to 5.3 mSv/h ($\theta = 5.5^0$). Dose rates measured near the upper DCM viewport were an order of magnitude larger than those recorded near the lower DCM viewport. Spectral analysis also revealed low energy peaks near these viewports. FLUKA results will be validated against these data.

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