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Measurements and computer simulation of the effect of magnet vibrations on the electron beam orbit in the NSLS-II storage ring

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One major factor contributing to electron beam stability in a storage ring is the mechanical vibrations of magnets. At NSLS-II, we employ electromagnetic actuators to induce controlled vibrations in the support girders of the magnets. Beam position monitors distributed around the ring measure the spatial and frequency distribution of beam oscillations. The collected data is used to create and validate a computer model through a simulated commissioning tool, simulating beam motion caused by magnet vibrations. This computational model is useful for establishing mechanical stability specifications for the low-emittance upgrade of NSLS-II.

Footnotes

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Primary author: KHAN, Aamna (Brookhaven National Laboratory)

Co-authors: GOMPRECHT, Jonathan (Brookhaven National Laboratory); YU, Chenghao (Brookhaven National Laboratory); SHARMA, Sushil (Brookhaven National Laboratory); SMALUK, Victor (Brookhaven National Laboratory); WANG, Guimei (Brookhaven National Laboratory)

Presenter: KHAN, Aamna (Brookhaven National Laboratory)

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