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Testing of a fan-out kicker to protect collimators from low-emittance whole-beam aborts in the Advanced Photon Source storage ring

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In the Advanced Photon Source Upgrade storage ring, the horizontal collimators protect the rest of the machine from whole beam aborts; however, as shown in previous experiments, the collimators themselves must also be protected from the full intensity of the lost store. The suitability of a vertically-deflecting fan-out kicker was evaluated experimentally. Aborted beam strikes the surface of the collimator with the expectation that the absorbed energy density or dose is reduced sufficiently to maintain the integrity of the device. We discuss the results from recent measurements where a fan-out kicker was employed to test this concept. 6 GeV, 200 mA (737-nC) APS stored beam was used to irradiate both aluminum and copper collimator test pieces.

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Footnotes

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