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Feasibility of using the crystal channeling to reduce the beam losses in Slow Extraction at 8GeV

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The mitigation of the beam losses in slow extraction is becoming more and more demanding in accelerator applications for HEP as the beam power is gradually increasing. The successful demonstration of using the proton beam channeling at 450GeV to deflect the beam away from the extraction septa opens the new levels of improving the slow extraction efficiency.

It is yet to be demonstrated that this method is still effective at low and medium proton beam energies. Here we present the results of the recent computer simulation studies of the septum shadowing at 8GeV for the Mu2e

project slow extraction at Fermilab. Depending on the beam parameters the beam loss reduction is shown to be achievable in the range of 1/3 to factor of 3.

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