

Dump system concepts, dilution and comparison of options

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The FCC-hh beam dump system must provide a safe and reliable extraction and dilution of the beam when being sent on the dump absorber. Energy deposition studies show that damage limits of presently used absorbers are already approached for single bunches at 50 TeV. A fast field rise of the extraction kicker is required in order to separate swept single bunches far enough on the extraction absorbers in case of an asynchronous beam dump. In line with this demand is the proposal of a highly segmented extraction kicker system. This could allow for the possibility of accepting a single kicker switch erratic and thus significantly reduce the probability of an asynchronous beam dump. In order to dump a full train of about 10000 bunches, in the dump line a dilution kicker system with varying frequency is proposed. Over-focussing quadrupoles are studied in order to reduce the aperture and strength requirements on the dilution kicker system.

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