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## FCC-hh injection and extraction: insertions and requirements

The design of the FCC-hh extraction systems is driven by the challenge to safely extract the 50 TeV proton beam. The new baseline for the beam dump system design foresees a fast single plane extraction realized by a highly segmented kicker system and a combination of SuShi (Superconducting Shield) and superconducting Cosine-Theta septa. In the dump line a focusing structure is included to reduce the hardware requirements on the dilution kicker system.

The layout changes and resulting hardware requirements for septa, dilution and extraction kicker magnets will be presented and the implications for failure scenarios and protection devices evaluated. It is proposed to consider multiple abort gaps to enable a faster beam abort and reduce the impact on the machine in case of failures. Technical implications of this proposal will be discussed. Several alternative layout and hardware solutions are summarized and compared to the baseline solution.

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