

Betatron collimation efficiency

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We present a first design of a collimation system for FCC-hh. The baseline collimation layout is based on the scaling of the present LHC collimation system to the FCC-hh energy. It includes dedicated betatron and momentum cleaning insertions as well as collimators in the experimental insertions to protect the inner triplets. Optics are scaled from the LHC ones that were optimised for a multi-stage collimation system. An aperture model for the FCC-hh is defined and the geometrical acceptance is calculated element by element at injection and top energy taking into account mechanical and optics imperfections. Based on these studies the collimator settings needed to protect the machine are defined. The performance of the collimation system is then assessed with particle tracking simulation tools. The efficiency of the betatron cleaning is evaluated by studying the longitudinal distribution of losses. Possibility for optimisations of the system are described.

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