

Abstract Submitted  
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**On FCC-hh Momentum Collimation System<sup>1</sup>** AAKAASH NARAYANAN, Northern Illinois Univ — The Future Circular Collider (FCC) is a proposed next-generation high-energy accelerator to be built at CERN, aiming at a 100 TeV CoM collision energy of protons, and studies of its design and feasibility are impetuously underway. One such important study is of its collimation systems, comprising of betatron collimation and momentum collimation. Here we look at the momentum collimation in a warm, straight-section (WSS). For the bunch length of 8 cm, and an RF of 400 MHz and 32 MV, the bucket height is about 9 GeV, or a maximum  $\frac{dE}{E}$  of about  $2 \times 10^4$ . But various loss mechanisms can send the particles way outside the bucket, so the intention is to catch particles that are even ten times the bucket height. Within WSS, the system consists of primary, secondary, and perhaps tertiary collimators. The impacts of various parameters, such as their placing, shape, orientation, and materials, are studied, keeping in mind to also optimize the phase advance of the particles from one collimator to the next. We also look at optimizing the optics of the FCC ring in order to facilitate momentum collimation. The study is done first for the traversal of the bunch in the WSS alone, then for one-turn around the full of FCC, and subsequently for very many turns around the ring.

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