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Damping ring and bunch compressor design for the Cool Copper Collider

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The Cool Copper Collider (C3) is a proposed electron-positron linear-collider Higgs factory which leverages the high accelerating gradient achieved when a normal conducting copper cavity is cryogenically cooled with liquid nitrogen. To produce suitably short, flat, low emittance electron and positron beams, prior to the main Linac, a damping ring and bunch compressor are employed. In this proceeding we present preliminary designs of the damping ring and bunch compressor optics. Intra-beam scattering in the damping ring, as well as space-charge and coherent synchrotron radiation effects during bunch compression are included. The performance of the damping ring and bunch compressor are considered in tandem with each other along with bunch spacing and charge to maximize the machine luminosity.

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