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## The design progress of a high charge, low energy spread polarized pre injector for Electron Ion Collider

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The polarized pre-injector for the Electron-Ion Collider is intended to produce four bunches every second, each containing 7 nC, with 85% polarization along the longitudinal axis, for injection into the Rapid Cycling Synchrotron. The pre-injector consists of a polarized electron source, bunching section, longitudinal phase space manipulation, and SLC-Type LINAC. To reduce energy spread and increase bunch length, a compact zig-zag chicane and dechirp cavity rotate the bunch in longitudinal phase space. In this paper, we will discuss the progress of recent pre-injection design and RF frequency selection. Additionally, we will examine the effects of wakefield, as well as coherent and incoherent synchrotron radiation on beam quality.

### Footnotes

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