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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 Electron-Ion Collider polarized pre-injector is designed to generate a 7 nC with eight bunches every second to inject into the Rapid Cycling Synchrotron. The pre-injector includes the polarized electron source, bunching section, traveling wave plate (TWP) LINAC, and longitudinal phase space manipulation. A compact zig-zag chicane, and dechirp cavity are used to rotate the bunch in longitudinal phase space to reduce the energy spread and increase the bunch length. In this proceeding, we present the RF frequency selection and the progress of the recent pre-injection design. We will also discuss the wakefield and coherent and incoherent synchrotron radiation impact on the beam quality.

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Footnotes

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Yes

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