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Preliminary physical design of the transport lines for the Positron Damping Ring of the Super Tau-Charm Facility

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The injector of the Super Tau-Charm Facility (STCF) should provide high-quality electron and positron beams for the collider ring according to different injection schemes, which is one of the key systems to ensure the high brightness of STCF. The transport line of the injector mainly consists of the electron transport section, the injection and extraction section of the positron damping ring, and the transport section from the main linear accelerator to the collider ring. Due to the complex structure, each transport section has different requirements for beam emittance, energy spread and other parameters. Preventing the beam quality from being damaged during transportation is one of the main challenges. In this report, we will introduce the physical design of the STCF transport line of different injection schemes, as well as the key issues and the optimization result in different transport sections.

Footnotes

Funding Agency

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Yes

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