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The positron source of STCF in China

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The proposal for a new generation high-luminosity electron-positron collider, the Super Tau-Charm Facility (STCF), has been put forward in China. The STCF is expected to achieve a luminosity greater than $0.5 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$ and operate within a center-of-mass energy range of 2 to 7 GeV. Considering the design challenges of the STCF collider ring, swap-out injection has been suggested as one of the alternative injection methods to achieve the desired luminosity. Therefore, the STCF injector will investigate both off-axis injection and swap-out injection methods concurrently. The demand for positron injection charge under swap-out injection is much higher than that of off-axis injection, requiring at least 300nC/s positron injection. Two positron source designs for both off-axis and off-axis injection will be presented in this paper.

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Primary authors: ZHANG, Ailin (University of Science and Technology of China); Prof. PEI, Guoxi (University of Science and Technology of China); PENG, Haiping; LUO, Qing (University of Science and Technology of China); XU, Xin (University of Science and Technology of China)

Presenter: ZHANG, Ailin (University of Science and Technology of China)

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