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A start-to-end optimization of the ILC E-driven positron source with the TPE algorithm

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The International Linear Collider (ILC) is a next-generation electron-positron collider based on the superconducting linear accelerator. Many positrons are required for the ILC because beams are not reused in linear colliders. Therefore, the ILC electron-driven (E-driven) positron source system should be designed to optimize efficient positron generation. In this study, we optimize the accelerator parameters including the drive electron beam energy, beam intensity, target thickness, positron capture linac RF phase and amplitude, the booster linac RF phase, ECS RF phase and amplitude, optics over the system, etc. by the black-box optimizer with TPE algorithm. The results of the optimization are presented.

Footnotes

Paper preparation format

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Author: SASAKI, Yodai (Hiroshima University)

Co-authors: URAKAWA, Junji (High Energy Accelerator Research Organization); YOKOYA, Kaoru (High Energy Accelerator Research Organization); FUKUDA, Masafumi (High Energy Accelerator Research Organization); KURIKI, Masao (Hiroshima University); KUROGUCHI, Shunpei (Hiroshima University); TAKAHASHI, Tohru (Hiroshima University); OMORI, Tsunehiko (High Energy Accelerator Research Organization); ENOMOTO, Yoshinori (High Energy Accelerator Research Organization); MORIKAWA, Yu (High Energy Accelerator Research Organization); LIPTAK, Zachary (Hiroshima University)

Presenter: SASAKI, Yodai (Hiroshima University)

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