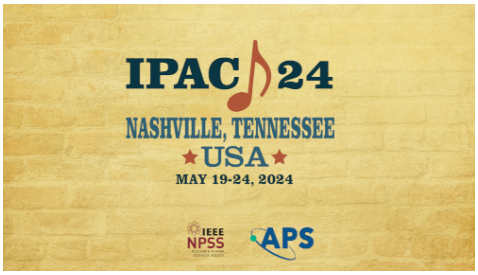

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Harnessing machine learning for the optimal design of ILC e-driven positron source

Monday, 20 May 2024 16:00 (2 hours)

The International Linear Collider (ILC) is a next-generation electron-positron collider designed to operate at center-of-mass energies ranging from 250 GeV to 1 TeV, opening up a wide range of possibilities for exploring physics beyond the Standard Model. Being the first of its kind, the ILC requires sophisticated technology to produce large quantities of positrons. The ILC electron-driven positron source is currently being designed and optimized using software tools such as Geant4, GPT, and SAD. However, this approach has traditionally involved sequential optimization, requiring human intervention, resulting in inefficiency and making global optimization challenging. To address this issue, we are incorporating machine learning techniques into the simulation of the entire positron source accelerator system, aiming for efficient and comprehensive optimization. By integrating machine learning methods from the design stage of the accelerator, we expect to efficiently create an accelerator of high precision. Herein, we present the efforts we are undertaking to achieve this goal.

Footnotes

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Primary author: KUROGUCHI, Shunpei (Hiroshima University)

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

Presenter: LIPTAK, Zachary (Hiroshima University)

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