



ILANCE Internships Spring / Summer 2025

University of Tokyo

<https://ilance.cnrs.fr/>

The Franco-Japanese laboratory, dedicated to the physics of the two infinities, benefits from an exceptional scientific and cultural environment.

An on-site laboratory in Japan, ILANCE brings together researchers, students, post-docs, engineers and technicians from CNRS and Japanese institutions. The laboratory is made up of French scientists for long-term stays in Japan and Japanese physicists. Individual research grants are awarded for postdoctoral stays or doctoral thesis. The laboratory will also aim to welcome and support French scientists for temporary stays in Japan. Based on the Kashiwa campus in the northeast of the city of Tokyo, the ILANCE laboratory permanently hosts scientists from CNRS laboratories and from four departments of the University of Tokyo namely, ICRR, Kavli IPMU, ICEPP and the School of Science.

Development of jet reconstruction ML algorithm for Higgs Bosons factories

Higgs factories, including ILC in Japan, are next-generation electron-positron collider projects to explore fundamental questions of the universe. One of the key characteristics of detectors for Higgs factories is highly-granular calorimetry for precise jet measurement. The "particle flow" algorithm to analysis big data from highly-granular sensors is critical for the jet reconstruction, and we are working on improvement of the algorithm using modern deep-learning techniques. The main part of this internship program is a simulation study of the algorithm, including implementing and improving track-cluster matching algorithm, investigation of effect of precise timing measurement, and investigate detector configuration giving maximal performance. Based on intention of the applicant, related hardware studies on silicon sensors and readout electronics of the highly-granular silicon calorimeter can be included

<https://www.icepp.s.u-tokyo.ac.jp/en/research/ilc.html>

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