



ILANCE Internships Spring / Summer 2024

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.

Looking for radio signals from ultra-high energy cosmic particles.

The GRAND (Giant Radio Array for Neutrino Detection) project aims at detecting ultra-high energy messengers (atomic nuclei, neutrinos, gamma-rays) coming from the most powerful sources in the Universe, with a 200'000 radio antenna array. Two prototypes have been deployed in 2023 in desert areas in China and Argentina, and the first dataset is currently being analyzed. In this internship, the candidate(s) will take part in this exciting phase of pioneering data analysis.

Two possible axes of research will be proposed, based on the collected data at both sites or based on simulations, for a prospective study on the China prototype.

a) the identification of specific signatures in the radio signals from cosmic particles. This will be used to discriminate efficiently against the background radio noise.

b) simulations to assess the performances of a hybrid detector (radio antennas + scintillators) at the China site, to detect cosmic particles.

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

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