



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.

Can modified gravity explain the accelerated expansion of the Universe ?

The study of new probes for analyzing modified gravity simulations of the large-scale structure of the Universe. Modified gravity (MG) theories of the type of $f(R)$ gravity can explain the accelerated expansion of the Universe without invoking the cosmological constant. Such models require introducing a new scalar field that naturally predicts rich gravitational effects in a different way from general relativity (GR). These modifications lead to changes in the environment of large-scale structures that could be used to distinguish this model from GR. The goal of this project is to provide critical tools to study modified gravity, and help to answer the key scientific question: Does modified gravity successfully explain the accelerated expansion of The Universe ?

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