

INTERNSHIP PROPOSAL

(One page maximum)

Laboratory name: Michigan State University; Facility for Rare Isotope Beams (FRIB);

International Research Laboratory NPA.

CNRS identification code: IRL2024

Internship director'surname: Xing Wu

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Phone number:

Web page: <https://npa.in2p3.fr/summer-training-program/>

Internship location: East Lansing, Michigan, USA

Thesis possibility after internship: NO

Funding: YES/NO, possible If YES, which type of funding:

gratification de stage CNRS (environ 700euros/mois)

Title: Centrifuge decelerator of radioactive molecules & atoms for fundamental symmetry tests.

Summary (half a page maximum)

Precision metrology on atoms and molecules benefits tremendously when the particles are prepared in the ultracold regime. This enables control and detection of atoms or molecules at the single-quantum-state level. In this project, we are developing a unique method to decelerate radioactive atoms and molecules to a standstill by centrifugal force. A spinning magnetic guide will be used to guide neutral atomic/molecular species from the periphery to the center of the rotating frame, and an electromagnetic trap will be used to collect the decelerated particles after they exit the centrifuge decelerator. This work will open the avenue to precision spectroscopy of superheavy species like Radium or Thorium containing molecules, as well as light species like Tritium atoms.

The registration for the internship must be done on the website: <https://npa.in2p3.fr/summer-training-program/>

Please, indicate which speciality(ies) seem(s) to be more adapted to the subject:

Condensed Matter Physics: NO Soft Matter and Biological Physics: NO

Quantum Physics: YES Theoretical Physics: NO