

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: Precision laser spectroscopy of ThO molecules for testing fundamental symmetries

Summary (half a page maximum)

Measurements of electric dipole moment (EDM) of fundamental particles place the most stringent constraints on time-reversal violating new physics beyond Standard Model. Precision spectroscopy on cold ^{232}ThO neutral molecules provides one of the best bounds on electron electric dipole moment. In addition, ^{227}ThO neutral molecules provides excellent opportunity to search for nuclear Schiff moment. In this project, the student will be developing the laser and optics system for performing precision spectroscopy measurement on cold ThO molecules. The project will also involve development of the vacuum beamline and cryogenic system necessary to produce the ThO molecules.

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