

MASTER SUMMER TRAINING PROPOSAL

Academic Year 2026/2027

TITLE: Integrate AI-control with a laser platform for quantum sensing experiment.

FRIB ADVISOR: Xing Wu

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UNIVERSITY/RESEARCH CENTER of the TRAINING:

Michigan State University, Facility for Rare Isotope Beams (FRIB), East Lansing Michigan, USA;
International Research Laboratory NPA, East Lansing Michigan, USA;

LEVEL: Master 1 or 2.

DURATION: 3 months at FRIB, 1 month remote.

TOPIC: instrumental developments, nuclear experimental analysis.

ABSTRACT

Quantum metrology has become increasingly precise in probing fundamental laws of physics, especially with the recent experimental breakthroughs that transform atoms and molecules into quantum sensors. However, for decades it has remained a formidable challenge to protect such quantum sensors against environmental noise, system drift, and imperfections in the experimental control. In this project, we aim to integrate physics-informed learning and reinforcement learning into a closed-loop and autonomous control of a laser platform, which will be used in our quantum metrology experiment.

Please note that this summer training does not imply a continuation for a PhD, but a CNRS grant and support for local expenses are included.

More information is available on the website <https://npa.in2p3.fr/summer-training-program/> and registration is mandatory on the following website: <https://indico.frib.msu.edu/event/87/>