

I propose to work on the Short Baseline Near Detector (SBND) and the COherent Neutrino-Nucleus Interaction Experiment (CONNIE). Concerning SBND, I plan to continue the neutron measurements I started during the sabbatical year I spent at Fermilab. For this sake, I propose to develop a new dedicated system for a complete characterization of the neutron background at the SBND building. This system may be used at other sites, both at Fermilab underground facilities as well as in other locations, such as facilities in nuclear reactors for neutrino studies. In CONNIE I plan to get involved in the R&D efforts to build a massive neutrino detector using the skipper-CCD technology. This involves the design and construction of a prototype detector with multiple skipper-CCD technology to be placed at the current CONNIE site in Brazil and which will enable to significantly decrease the detection threshold, allowing us to place competitive constraints on Nonstandard Neutrino Interactions. In particular, I intend to contribute to the tests of new cooling systems for the CCDs and performance studies with the multiplexed system for reading out at the same time several devices. These research activities can only be undertaken at Fermilab, where I plan to spend a significant part of the year, should the fellowship be approved.