MANOA ANDRIAMIRADO

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EDUCATION

Illinois Institute of Technology *Aug. 2019 – Spring 2024*
PhD student in Elementary Particle Experiment
Thesis Title: *Probing New Physics with the PROSPECT Reactor Antineutrino Experiment.*
Advisor: Prof. Bryce Littlejohn

University of Antananarivo *May 2017 – Jul. 2019*
Master of Science in Physics
Thesis Title: *Study of Neutron Background in the 3D-projection Scintillator Detector.*
Advisors: Prof. David Martinez Caicedo and Prof. Raboanary Roland

University of Antananarivo *May 2014 – Mar. 2017*
Bachelor of Science in Physics

APPOINTMENTS

Research Assistant Aug. 2019 - Present
Illinois Institute of Technology *Chicago, IL*

Teaching Assistant Fall 2019
Illinois Institute of Technology *Chicago, IL*

RESEARCH EXPERIENCES

Sterile Neutrino Search at the PROSPECT Experiment 2019 - Present

- Led the oscillation analysis for the final sterile neutrino search at PROSPECT.
- Generated the final plots, contributing to the experiment's findings.
- Maintained PROSPECT's oscillation analysis framework.

Inspection of PROSPECT-I Reflector Panels Jan. - Jun 2022

- Guided the design of PROSPECT-II panels through our findings.

Boosted Dark Matter Search at the PROSPECT Experiment Jul. 2019 - Apr. 2021

- Analyzed PROSPECT data for a dedicated boosted dark matter search.

Neutron study for the 3D-projection Scintillator Tracker System Dec. 2018 - Jul. 2019

- Developed an analysis tool to conduct a neutron background study.
- Assessed detector design's ability to reconstruct neutrino interactions.

SELECTED PUBLICATIONS

Final Search for Short-Baseline Neutrino Oscillations with the PROSPECT-I Detector at HFIR
PROSPECT Collaboration, Internal review

Limits on Sub-GeV Dark Matter from the PROSPECT Reactor Antineutrino Experiment
PROSPECT Collaboration and C. V. Cappiello, Phys. Rev. D 104, 012009 (2021)

PROSPECT-II Physics Opportunities
PROSPECT Collaboration, J. Phys. G: Nucl. Part. Phys. 49, 070501 (2022)

Improved Short-Baseline Neutrino Oscillation Search and Energy Spectrum Measurement with the PROSPECT Experiment at HFIR
PROSPECT Collaboration, Phys. Rev. D 103, 032001 (2021)

PRESENTATIONS

APS DNP Meeting 2023 — Big Island, HI
Final Search for Short-Baseline Neutrino Oscillations with the PROSPECT-I Detector at HFIR — *Nov. 26- Dec. 1, 2023*

APS April Meeting 2023 — Minneapolis, MN
PROSPECT-II Physics Goals — *Apr. 15-18, 2023*

APS DNP Meeting 2022 — New Orleans, LA
PROSPECT-II Physics Goals — *Oct. 27-30, 2022*

Neutrino 2022 — Seoul, South Korea
Limits on Sub-GeV Dark Matter from the PROSPECT Reactor Antineutrino Experiment (Poster) — *May 30 - June 4, 2022*

APS April Meeting 2022 — New York
PROSPECT-II Oscillation Physics Goals and Beyond — *Apr. 9–12, 2022*

Topics in Astroparticle and Underground Physics 2021 — Madrid, Spain
Recent Physics Results from the PROSPECT Experiment — *Aug. 26 - Sep. 3, 2021*

New Perpective 2021 — FNAL, IL
Limit on sub-GeV Dark Matter from the PROSPECT Experiment — *Aug. 16-19, 2021*

APS April Meeting 2021 — Virtual
Cosmic ray Boosted Dark Matter at PROSPECT – Experimental Analysis — *Apr. 17-20, 2021*

APS Prairie Section Fall Meeting — Virtual
PROSPECT-II Detector Upgrade and Sterile Neutrino Oscillation Sensitivity — *Nov. 11-13, 2020*

WORKSHOPS

14th International Neutrino Summer School 2023 FNAL, IL

Computational and Data Science for High Energy Physics 2023 Princeton, NJ

National Nuclear Physics Summer School 2022 Boston, MA

13th International Neutrino Summer School 2021 Virtual

AWARDS

National Nuclear Physics Summer School 2022 Boston, MA

- Awarded travel support to attend NNPSS 2022

NON-ACADEMIC EXPERIENCES

Flower Species Classifier Nov. 9, 2018 - Jan. 9, 2019
Pytorch Schoolarship Challenge Nanodegree Program

- Built a deep learning model using pytorch to classify 108 flower species.

Retinopathy Disease Image Classification Sep. 10–17, 2018
SARAO Big Data Africa School 2018

- Developed an image classifier to identify retinopathy in medical images using machine learning algorithms.
- Used image processing techniques for feature extraction and data augmentation.

Image-Based Data Mining to Improve Radiotherapy for Cancer Treatment May. 25-29, 2018
JEDI Workshop in Big Data Science

- Investigated variable that correlates with radiation dose to improve radiotherapy.
- Used image-based data mining techniques.

TECHNICAL SKILLS

Computer Languages	C, C++(11), Python, Bash
Frameworks	ROOT, Scikit-learn, Pytorch
Tools	Vim, Github, CMake, Valgrind
Operating Systems	Linux, Microsoft Windows

LANGUAGES

English	Professional working proficiency
French	Professional working proficiency
Malagasy	Native proficiency