MANOA ANDRIAMIRADO

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EDUCATION

Illinois Institute of Technology *Aug. 2019 – Present*
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 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