Michael Dolce

Curriculum Vitae

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Education

2021–Present **Doctoral Candidate, Universities Research Association (URA) Visiting Scholar**, *Tufts University*, Medford, MA.
Physics

2020 **Masters of Science**, *Tufts University*, Medford, MA.
Physics

2017 **Bachelor of Science**, *SUNY University at Albany*, Albany, NY.
Physics

Research

Final State Interactions (FSI) Systematics in NOvA

2020 Tufts University

Produced a new central value tune and systematic uncertainties for the hN FSI model in the neutrino generator GENIE. The central value tune and and uncertainties were applied to NOvA's oscillation analysis for 2020.

Nuclear Optical Potential Study for NOvA

2019 Tufts University

Studied the Removal Energy treatment, known as the Binding Energy, in the neutrino generator GENIE. Created a systematic knob for the Removal Energy within NOvA's framework for analysis.

Charge Transparency Study for MicroBooNE

2017 Brookhaven National Laboratory

Studied the signal strength of charge deposited on the MicroBooNE anode planes of the Liquid Argon Time Projection Chamber (LArTPC) detector. To study the transparency, the voltage applied to the U and V planes was investigated to maximize signal strength on the Y plane.

Optimization of ν_τ for DUNE

2016 Brookhaven National Laboratory

Optimized the LBNF Target Complex configuration for the tau neutrino appearance signal at the far detector. Simulated the DUNE experiment under different configurations to understand the ideal conditions for tau neutrinos.

Undergraduate Project

2016 University at Albany

Studied the ATLAS inner detector of the Large Hadron Collider at CERN by analyzing data and Monte Carlo (MC) from reconstructed secondary vertices of hadronic interactions. Worked to improve the MC in the beamline, pixel layers, and pixel discs.

Talks, Presentations, Posters

2020 Michael Dolce, for the NOvA Collaboration, *NOvA central value tuning and uncertainties for the hN FSI model in GENIE 3*, Talk at *New Perspectives 2020*, Fermilab, USA, July 20 to July 21, 2020.

2020 Michael Dolce, for the NOvA Collaboration, *NOvA central value tuning and uncertainties for the hN FSI model in GENIE 3*, Poster at *Neutrino 2020*, Chicago, USA, June 22 to July 2, 2020.

2016 Michael Dolce, for the DUNE collaboration, *Optimization of the LBNF/DUNE beamline for tau neutrinos*, Talk at conclusion of SULI program, Brookhaven National Laboratory, USA, August 12, 2016.

Publications

2020 NOvA Collaboration, M.A. Acero *et al.* [NOvA and R. Group], "Search for Slow Magnetic Monopoles with the NOvA Detector on the Surface", arXiv:2009.04867 [hep-ex].

2020 NOvA Collaboration, M. Acero *et al.*, "Supernova neutrino detection in NOvA", arXiv:2005.07155 [physics.ins-det].

2018 MicroBooNE collaboration, C. Adams *et al.*, "Ionization electron signal processing in single phase LArTPCs. Part II. Data/simulation comparison and performance in MicroBooNE", "JINST" 13 (2018) P07007, [1804.02583].

Collaboration Contributions

NOvA Production Member

2019 – 2020 Team member in production campaign for NOvA's 2020 analysis. Responsible for the submission, management, and optimization of computational jobs to FermiGrid computing cluster and off-site computing resources. Also managed NOvA datasets to be processed for collaboration use.

Academic Involvement

Listening Project

2018 – Present Tufts-Howard Hughes Medical Institute Inclusive Excellence Program: Listening to Students' Thinking in STEM. Examine student artifacts across the science discipline to improve the understanding of student ideas as an instructor.

Recent Teaching Assignments

2017 – 2020 Teaching Assistant to Introductory Physics I & II discussion sections. Fostered environment for students to share and encourage their ideas, with an emphasis on scientific reasoning.

2019 Lead Teaching Assistant to Introductory Physics II laboratory sections. Managed the administrative and grading responsibilities of the labs for the TAs in addition to teaching a lab section.