Michael Dolce

Curriculum Vitae

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Education

Present **Doctoral Candidate, Physics.**, *Tufts University*, Medford, MA.

Universities Research Association (URA) Visiting Scholar, *Fermi National Accelerator Laboratory*, Batavia, Illinois.

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

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

Research

Tufts University 2019–Present

- **PhD Thesis, measuring neutrino oscillation parameters** from the NOvA data using Markov Chain Monte Carlo and Hamiltonian Monte Carlo sampling.
- **Validation of the MK model** implementation in GENIE 3.2 to allow its official release.
- **NOvA central value tuning** and construction of uncertainties for hN FSI model in GENIE 3.
- **Study of nuclear binding energy in GENIE** and its impact on the NOvA experiment's analysis.

Brookhaven National Laboratory 2016–2017

- **Signal processing to maximize signal from background noise** on different configurations of the MicroBooNE anode plane detector.
- **Optimization of ν_τ events in DUNE detector Far Detector** to maximize the tau neutrino production rate for the Deep Underground Neutrino Experiment (DUNE).

University at Albany 2016

- **Validations study of Monte Carlo (MC) simulation** of the ATLAS inner detector's beamline, pixel layers, and pixel discs with data.

Grants and Achievements

2021 **Recipient of Universities Research Association (URA) Visiting Scholar Program (VSP)** award to allow faculty and students to work at Fermi National Accelerator Laboratory.

2016 **Nominated to present outstanding research** at the conclusion of SULI program at Brookhaven National Laboratory.

2015-2017 **Dean's List** recipient while attending the University at Albany.

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 & Outreach

Present **Diversity, Equity & Inclusion (DEI) Committee Member** of the Tufts Physics Department to put forth immediate and long-term actions to attract and support Black and under-represented students in physics.

2018-Present **Member of the Listening Project.** 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.

2021 **Graduate Student Ambassador** for the Tufts Physics & Astronomy Department. Communicated with admitted graduate students to help them settle and transition into Tufts successfully.

2021 **Volunteer judge** in Massachusetts Region IV high school science fair evaluating students' physics and coding-related projects.

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.

Personal

2021 US Soccer Grassroots Coaching license.

2016 Initiation into Sigma Pi Sigma physics society.

2016 Initiation into Theta Tau professional engineering fraternity.