

# 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 ??** before the release of GENIE 3.2 with the MK Resonant model???.
  - ▷ **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  $\nu_\tau$  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 –** 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.
- 2018 –** **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.
- Present** **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** – 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.