AITOR BRACHO

(786)953-0095 ◇ aitorb91@gmail.com ◇ linkedin.com/in/aitorbracho

EDUCATION

Duke University Graduate School August 2019 - present
Ph.D. Candidate in Nuclear and Particle Physics.

Florida International University August 2016 - May 2019
Bachelor of Science in Physics, *magna cum laude*. Unweighted GPA: 3.71
Minor in Mathematics.

TECHNICAL EXPERIENCE

Duke University, Triangle Universities Nuclear Laboratory August 2019 - Present
PhD Candidate and Research Assistant, Barbeau lab *Durham, NC*

- Collected fission gamma ray spectral data from ^{239}Pu and ^{235}U to study production rates of various fission products.
- Building a novel, maximum-likelihood-based model of analysis for time-variant data in nuclear physics applications.
- Licensed operator of Triangle Universities Nuclear Laboratory (TUNL) tandem particle accelerator.
- Experience evaporating Lithium Fluoride targets for neutron beam production.
- Radiation safety certified.

North Carolina League of Conservation Voters (NCLCV) May 2024 - August 2024
Energy Storage Systems Fellow *Raleigh, NC*

- Analyzed data from the U.S. Energy Information Administration's Preliminary Monthly Electric Generator Inventory database to benchmark North Carolina's energy storage efforts against other states and utilities.
- Studied energy storage and renewables development rates in states with similar emissions reduction policies to North Carolina.

TerraPower, LLC June 2023 - September 2023
Experimental Methods Intern *Bellevue, WA*

- Developed and compared multiple analytical models of neutron noise in the Molten Chloride Fast Reactor (MCFR).
- Utilized Python and the Advanced Reactor Modeling Interface (ARMI) to create predictive models for future neutron noise results in the Molten Chloride Reactor Experiment (MCRE).
- Conducted in-depth literature reviews of numerous academic publications related to neutron noise in Molten Salt Reactors.
- Authored a comprehensive technical report documenting research findings, methodologies, and insights.

POLICY EXPERIENCE

North Carolina League of Conservation Voters (NCLCV) May 2024 - August 2024
Energy Storage Systems Fellow *Raleigh, NC*

- Conducted in-depth research and policy analysis on nuclear energy and energy storage as a means to critically assess the impacts of Duke Energy's Carbon Plan/Integrated Resource Plan (CPIRP).
- Conducted interviews with experts from the Conservation Voters network and external environmental advocacy groups to gain insights into energy storage practices and policies in other states.
- Evaluated the impact of federal and state policies on the availability, affordability, and feasibility of energy storage projects in the state.
- Authored a report on energy storage development in North Carolina, which will be submitted as a statement of public comment to the North Carolina Public Utilities Commission.
- Authored a report on the current and future state of nuclear energy in North Carolina, evaluating Duke Energy's proposals while delivering actionable recommendations to inform NCLCV's stance on nuclear energy developments in the state.

ADVOCACY EXPERIENCE

Nate Baker Durham City Council Election Campaign Team September 2023 - November 2023
Durham, NC

- Collaborated with campaign staff to develop and execute strategic initiatives aimed at increasing voter engagement and support for Nate Baker's platform.

North Carolina League of Conservation Voters (NCLCV) August 2024 - Present
Durham, NC

- Contributing to the preparation of a statement of public comment for submission to the North Carolina Utilities Commission, aiming to influence the consideration of the 2025 Duke Energy Carbon Plan and the state's approach to energy storage.

TECHNICAL SKILLS

Python: Used for statistical modeling, spectrum analysis, large-scale data processing, and data visualization in nuclear and particle physics research (PhD), industry (TerraPower), and energy development applications (NCLCV).

ROOT & RooFit: Integrated with Python for statistical modeling, likelihood fitting, and data visualization in nuclear and particle physics.

C++: Developed custom data processing pipelines to convert raw binary data output into formats suitable for analysis.

Pandas: Used for parsing U.S. Energy Information Administration's Preliminary Monthly Electric Generator Inventory data and subsequent conversion to an analyzable data structure.