

DR. NATHANIEL TAGG

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 [Github](#)

 [LinkedIn](#)

 [Curriculum Vitae](#)

I am an experimental particle physicist, used to working in teams and with large collaborations. I use software to simulate, calibrate, control, and acquire data from hardware (such as massive, complex particle detectors). I am expert with data analysis, data acquisition, databases, and visualization. I have created everything from hardware interfaces to web applications, both close-to-the-metal resource-intense computing and high-level GUIs. I am adept at mastering new systems and technologies. I am an expert teacher and presenter and I excel at engaging all kinds of audiences.

SKILLS

Programming: Expert in C/C++, Javascript, Python, Perl, bash, HTML/CSS, FORTRAN.

Technical: Data visualization via web-based and 3d technologies, UNIX systems and sysadmin, web technology (full stack), high-throughput data acquisition, data monitoring, Git/Subversion/CVS, Google/Azure APIs. AWS. SSH. Database access and table design (MySQL, Postgres, SQLite, MongoDB), parallel processing.

Hardware: Expert on photomultiplier and related optical sensors, scintillators, liquid argon time projection chambers, semiconductor radiation counters, basic analog/digital circuits, microprocessors.

Scientific: Subatomic physics. Data mining, data fusion. Understanding of statistics and data analysis of large data sets - particularly multivariate fits and uncertainty estimation, detector calibration, data reconstruction, blind analysis techniques, successful grant writing, technical writing.

Interpersonal: Years of experience mentoring, teaching, advising, collaborating long-distance, and leading groups within large multinational scientific collaborations.

JOB HISTORY

Professor, Otterbein University — 2008-Present

Teaching, research, and service to the university and scientific communities. Developed courses and curricula. Created educational simulations to illustrate electric fields and wave propagation for undergraduates. Invented a full-stack database tools to aid faculty in advising students. Awarded continuous NSF research funding for 15 years, directly supporting work on the large international MINERvA, MicroBooNE and DUNE experiments.

EDUCATION:

Ph.D. Physics
M.S. Physics
B.S. Physics

Notable contributions included creation of 2- and 3-D interactive event display software, creation, development and maintenance of highly-parallel near-time detector monitoring, contributions to event reconstruction and core software support, and public outreach.

Promoted to Full Professor two years early.

Chair of Physics, Otterbein University — 2016-2020

Responsible for personnel, budget, and assessment/review.

Visiting Professor, Tufts University — 2006-2008

Research assistant, Brookhaven National Lab — 2007-2008

Research on the MINOS and Daya Bay experiments. Notable projects include measurement of the time-of-flight of neutrinos over 450 miles, development of monte-carlo simulations, leader of scientific task force for detector calibration, and authorship of software for managing detector calibration databases.

Postdoctoral Research Assistant, Oxford University (UK) — 2000-2006

Responsible for system used to establish nanosecond time synchronization, development of an optical Monte-Carlo simulation of scintillator for the MINOS collaboration.

REFERENCES

David Robertson, Professor, Otterbein University drobertson@otterbein.edu

Bonnie Fleming, Professor at Yale, spokesperson for the MicroBooNE collaboration bonnie.fleming@yale.edu

Geralyn Zeller, Deputy division head at Fermi National Accelerator laboratory, spokesperson for MicroBooNE experiment gzeller@fnal.gov

EDUCATION DETAILS

University of Guelph, Canada — Ph.D in Physics, 2001

Contributed to the Sudbury Neutrino Observatory, an experiment which earned the 2015 Nobel Prize in Physics for the director, Art MacDonald.

University of Guelph, Canada — Masters of Science (Physics), 1996

University of Lethbridge, Canada - Bachelors of Science (Physics), 1993