MICHAEL GENNARI

Personal Website: csclub.uwaterloo.ca/~mgennari/
LinkedIn Page: ca.linkedin.com/in/michaelgennari

3660 Cemetery Road
Hamilton, ON L0R 1C0
Mobile: (905) 975 - 8277
Email: mgennari5216@gmail.com

EDUCATION AND AWARDS

University of Waterloo – *Candidate for Bachelors of Science*

- 3B Term Honors Mathematical Physics (Double Degree Honors Physics and Applied Mathematics)

President's Scholarship of Distinction – *University of Waterloo*

- Awarded an academic scholarship and separate research funding the equivalent of $1500 CAD to work in the Department of Physics and Astronomy at the University of Waterloo

RESEARCH EXPERIENCE

TRIUMF – Theory Group
Researcher in Theoretical Nuclear Physics – January 2017 to Present

- Worked on extending *ab initio* calculations of no-core shell model nuclear structure to be used in improving predictions of high energy nuclear reactions and density functional theory
- Implemented a non-local, translationally invariant form of nuclear density in our code by exactly removing the spurious centre of mass component from the harmonic oscillator wavefunctions
- Derived an expression for kinetic density of nuclei and implemented this into code to visualize the amplified effects of centre of mass removal in nuclear densities
- Worked in collaboration with other theory group members at TRIUMF to use the more physically accurate non-local translationally invariant nuclear density to make theoretical predictions for the optical potentials of nuclei
- Utilized modern nucleon-nucleon and three-nucleon chiral interactions

University of Waterloo
Volunteer Astrophysics Research Project – October 2016 to Present

- Worked on determining how galaxies in the local volume (Approximate radius of 10 parsecs) were organized into bound groups by developing a friends-of-friends algorithm which was then applied to data from the Karachentsev Local Volume Catalogue
- Currently working on calculating probabilities that major galaxies dominate their respective groups and associating dark matter halos with each dominant galaxy

CONFERENCES AND PRESENTATIONS

Progress in Ab Initio Techniques in Nuclear Physics (TRIUMF, 2017 and 2018)

- Workshop focused on new developments in *ab initio* nuclear theory such as progress in first-principles nuclear structure and reaction calculations, and latest developments in construction of accurate nucleon-nucleon and three-nucleon interactions
- Attended and presented research in *ab initio* nuclear theory conducted at TRIUMF

American Physical Society Division of Nuclear Physics (Pittsburgh, 2017)

- Conference experience for undergraduate students who have conducted research in nuclear physics, providing them the opportunity to present their research to the larger professional community
- Attended and presented research in *ab initio* nuclear theory conducted at TRIUMF

Advisory Committee on TRIUMF – Parallel Theory Group Session (2017)

- Theory group presentation to National Research Council of Canada on Non-Local Translationally Invariant Nuclear Density

TEACHING EXPERIENCE

Guelph - Humber Math Centre, Math Centre Staff – January 2016 to April 2016

- Primarily worked as a mathematics, physics, and engineering tutor for the Math Centre
- Successfully conveyed challenging concepts in academia during both one on one and group tutoring sessions at the centre
- Collected data on the effectiveness of math centre tutoring and advertising strategies to determine the most effective techniques of teaching and raising awareness of the centre

University of Waterloo, Physics Interconnected Mentor – September 2015 to Present

- Volunteered in the Department of Physics and Astronomy by assisting with a first-year mentorship and tutoring program for incoming physics majors
- Met on a weekly basis with multiple students for approximately one hour to provide academic and community support

TECHNICAL SKILLS

- Extensive knowledge of scientific computation using languages such as FORTRAN90, Python with computational libraries, and R
- Minor experience using MPI90 in FORTRAN
- Experienced with utilizing external computing grids for calculations, such as Cougar (TRIUMF) and Cedar (Simon Frasier University)
- Familiar with Linux based operating systems and shell scripting