Dane Gollero

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EDUCATION

University of Utah, Salt Lake City, Utah   2015 – 2021
GPA: 3.714/4.00
B.S. in Physics, Applied Mathematics

RESEARCH INTERESTS

Low-dimensional topology and its applications to physics; mathematics of quantum field theory; mathematics of string theory; representation theory; algebraic geometry; quantum gravity

PUBLICATIONS

- *Braid Indices of 1-Bridge Braids* with S. Krishna, M. Loving, V. Neri, I. Tahir, L. White (in preparation)
- *Saddle points of the Sea Ice Surface and the Fractal Geometry of Arctic Melt Ponds* with R. Moore, J. Jones, K. Golden, C. Strong (submitted)

AWARDS

- *"Outstanding Research Presentation"*, SACNAS   Fall 2021
- Phi Eta Sigma Honors Society member   Apr 2016

RESEARCH EXPERIENCE

Participant, Georgia Tech REU
Advisors: Dr. Siddhi Krishna, Dr. Marissa Loving   Summer 2021

  − Studied the braid index of 1-bridge braids, an important class of knots in low-dimensional topology

Undergraduate Research Assistant, Department of Physics
PI: Professor Vikram Deshpande   Spring 2020

  − Worked for a semester on electronic transport, gathering graphene for experimentation and data analysis

Undergraduate Research Assistant, Department of Physics
PI: Professor Ken Golden   Spring 2018 – Fall 2019

  − Saddle points of the Sea Ice Surface and the Fractal Geometry of Arctic Melt Ponds

Undergraduate Research Assistant, Department of Physics
PI: Professor Pearl Sandick   Spring 2019 – Summer 2019

  − Distinguishing Dark Matter: a Photon Story
  − Researched indirect detection methods for dark matter with Professor Sandick in conjunction with the Summer Undergraduate Research Program (SURP) at the University of Utah

Presentations

- AMS - PME Student Poster Session, Joint Mathematics Meeting — Jan 2022
- Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) — Oct 2021
- Gulf Coast Undergraduate Research Symposium (GCURS), Rice University — Oct 2021
- Young Mathematicians Conference 2021 (YMC), Ohio State University — Aug 2021
- Summer Undergraduate Research Program (SURP), University of Utah — June –Aug 2019

Conferences attended

- PHYSCON — Nov 2019
- The Search for New Physics: Leaving No Stone Unturned, University of Utah — Aug 2019

Teaching Experience

- **Teaching Assistant**, Department of Physics, University of Utah (10 hours per week) — Spring – Summer 2020
  PHYS 2010 and PHYS 2220
- **Teaching Assistant**, Department of Physics, University of Utah (10 hours per week) — Fall 2018
  PHYS 2225

Relevant work experience

- **Tutor, BuffTutor Network**, Salt Lake City — Fall 2021
  Tutors college calculus and physics courses (8 hours per week)
- **Tutor, Engineering Statics Tutor**, University of Utah — Fall 2020
  Tutored a student in Engineering Statics (ME EN 2010 | University of Utah) (1 hour per week)
- **Parkour Coach**, Black Diamond Gymnastics — Spring 2016-2017
  Coached parkour at a gymnastics gym (10 hours per week)
- **Parkour Coach**, Jump Up Gymnastics — Spring 2015
  Coached parkour at a gymnastics gym (10 hours per week)

Projects and Independent Studies

- Directed Reading Program in symplectic geometry (University of Utah) — Fall 2021
- Directed Reading Program in abstract algebra (University of Utah) — Summer 2021
- Higgs boson discovery analysis (final project PHYS 3719 | University of Utah) — Spring 2021
- Directed Reading Program in Lie algebras and representation theory (University of Utah) — Spring 2021
- GPS simulator (final project MATH 5600 | University of Utah) — Spring 2021
- Directed Reading Program in Lie groups and smooth manifolds (University of Utah) — Fall 2020
- Dark Matter Spectra Generator (DMSG) (University of Utah) — Summer 2019

Leadership

- Chair, Undergraduate Student Advisory Committee, Dept. of Physics and Astronomy — June 2020 – May 2021
- Undergraduate Curriculum Reform committee member (University of Utah) — Spring – Fall 2021

Python, Java, C++, MATLAB