

Margaret Doig

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academic CV available on website

Assistant professor of mathematics interested in an industry position. Research experience in low-dimensional topology and interdisciplinary areas. Teaching experience across a wide variety of courses and student levels as well as extensive course development. Prior program management and quality assurance work for a volunteer aviation organization.

EXPERIENCE

Assistant Professor Creighton University	Omaha, NE 2016–Present
Philip T. Church Postdoctoral Fellow Syracuse University	Syracuse, NY 2013–2016
Zorn Postdoctoral Fellow Indiana University, Bloomington	Bloomington, IN 2010–2013

EDUCATION

PhD Mathematics Princeton University	Princeton, NJ 2010
BS Mathematics, BA Philosophy University of Notre Dame	Notre Dame, IN 2005

SKILLS

Research

- On-going research program in low-dimensional topology. Several interdisciplinary research projects: impact of a historical figure on mathematical education; assessment of progress in sustainable development; use of traditional graph theoretic methods to examine invariants from mathematical chemistry; applying experimental techniques from mathematical physics to an object which rose to prominence from Heegaard Floer theory.
- Collaborative work: 5 of 8 publications were co-authored, as are 3 on-going projects. The majority of the remaining projects were developed and executed independently.
- Research is communicated in writing: 8 articles published or accepted and several more under review or in progress.
- Research is communicated orally: over 50 research presentations, including 16 invited seminars/colloquia at external institutions and 12 invited sessions at conferences.

Technical Skills

- Several projects involve design and implementation of algorithms ranging from simple to very complex.
- Proficient in c++; created and maintain [DMT](#) (DoigMathToolkit), a collection of calculations produced to assist research in low-dimensional topology and now freely available online through a GUI for ease of use by other researchers.

Teaching

- As of spring 2024, taught 73 sections of 22 courses ranging from math for liberal arts students to majors' electives and interdisciplinary honors courses.
- Adapted course materials and teaching techniques in majors' courses to be simultaneously suitable to a wide variety of student backgrounds and strengths.
- Overhauled course content for a large service course and created workbooks in use by others in the department. Developed 2 interdisciplinary honors electives. Redesigned 3 majors' electives.
- Have advised or co-advised 7 undergraduate students, 3 of whom presented at conferences and 2 of whom are preparing articles.

Program Management and Standardization/Evaluation

- Several program management positions for Civil Air Patrol. As Director of Operations for Indiana Wing (2012-2013), oversaw flight operations for 1300 members, approximately 1800 flight hours per year; managed staff including standardization and evaluation (flight safety and education for approximately 35 pilots/25 mission pilots), aircrew training (approximately 70 aircrew members), maintenance (9 aircraft with acquisition value of approximately \$5,000,000), and assorted mission-specific personnel. As Assistant Deputy Chief of Staff-Operations for Great Lakes Region (2020-2022), assisted as needed with overhead management of flight operations for 6 states.
- Several standardization/evaluation positions for Civil Air Patrol (variously since 2016). As an instructor, train and evaluate pilots to standards and support a culture of safe and effective flying. As a check pilot and mission check pilot, evaluate flight and mission effectiveness and safety of pilots. As a check pilot examiner and mission check pilot examiner, evaluate other check and mission check pilots to help ensure the quality and standardization of training and evaluations and promote a communal culture of continuing improvement and safety. As a stan/eval officer, oversee the administration of training and evaluation programs and ensure quality and consistency of training and performance. As of August 2022, Stan/Eval Officer for Mission Aircrew School, National Emergency Services Academy, which develops new emergency services training and operational techniques and promulgates them to trainers nationwide.
- Commercial Pilot License (cert. no. 3438284). Certified Flight Instructor – Airplane Single Engine Land, Instrument Airplane. First Class Medical.
- Participated in 8 hiring committees at Creighton University (6 in mathematics and 2 for honors program postdoctoral fellows).
- Served on program advisory boards for the University of Notre Dame Honors Program and the Creighton University Honors Program.
- Interviewed, reviewed, or evaluated applicants for multiple university programs.