Wern Juin Gabriel Ong

wgabrielong@uni-bonn.de

Education

- **Rheinische Friedrich-Wilhelms-Universität Bonn** — Bonn, Germany
  M.S. Mathematics — *October 2024 - Exp. August 2026*
- **Bowdoin College** — Brunswick, ME
  B.A. Mathematics & Minor in Classical Greek (Leave 2020-21) — *August 2019 - May 2024*
- **Harvard University** — Cambridge, MA
  Visiting Student — *September 2023 – December 2023*
- **Columbia University in the City of New York** — New York City, NY
  Visiting Student — *August 2020 - June 2021*
- **Mont' Kiara International School** — Kuala Lumpur, Malaysia
  High School Diploma & IB Diploma — *August 2017 - May 2019*

Experience

- **Nonlinear Algebra – Max Planck Institute for Mathematics in the Sciences** — Leipzig, Germany
  Visiting Researcher (Mentor: P. Breiding) — *May 2022 - August 2022*
- **The Xena Project – Imperial College London** — London, United Kingdom
  Independent Contributor — *June 2021 - August 2021*
- **Karanicolas Lab – Fox Chase Cancer Center & Temple Medical School** — Philadelphia, PA
  Researcher (Mentor: J. Karanicolas) — *May 2020 - June 2021*

Research in Mathematics

As is convention in mathematics, authors are ordered alphabetically by last name.

- S. McKean, G. Muratore, **W. Ong**. "Quadratic Counts of Lines Highly Tangent to Hypersurfaces" [arXiv]
- N. Borisov, T. Brazelton, F. Espino, T. Hagedorn, Z. Han, J. Lopez Garcia, J. Louwsma, **W. Ong**, A. Tawfeek. "$\mathbb{A}^1$-Brouwer Degrees in Macaulay2." *J. Software for Algebra and Geometry, Vol. 14, No. 1.* [arXiv][Journal]
- P. Breiding, J. Lindberg, **W. Ong**, L. Sommer. "Real Circles Tangent to 3 Conics." *Le Matematiche, Vol. 78, No. 1.* [arXiv][Journal]

Research in Computational Biology

Authors are ordered by contribution. † Indicates equal contribution.

- G. Andrianov, **W. Ong**, I. Serebriiskii, and J. Karanicolas. "Efficient Hit-to-Lead Searching of Kinase Inhibitor Chemical Space via Computational Fragment Merging." *J. Chemical Information and Modeling, Vol. 61, No. 12.* [Journal] [bioRxiv]
- **W. Ong**†, P. Kirubakaran†, J. Karanicolas. "How Current Neural Network Models for Kinase-Inhibitor Affinity Predictions Generalize Poorly." [bioRxiv]

Expository Writing

I am also author of the following lecture notes which have become somewhat popular.

- V5A4 - Habiro Cohomology - Summer 2025 Course by Prof. Dr. P. Scholze at the University of Bonn

Selected Presentations

A full list of presentations is available at `wgabrielong.github.io/talks`.

- "Arithmetic Counts of Highly Tangent Lines" `Macaulay2` Workshop, Madison, Wisconsin, July 2025
- "The Arc Topology" ARGOS Seminar on 'Berkovich Motives' and 'Geometrization of Local Langlands, Motivically', Bonn, Germany, Winter 24/25
- "$\mathbb{A}^1$-Brouwer Degrees in `Macaulay2`" Effective Methods in Algebraic Geometry (MEGA), Leipzig, Germany, July 2024
- "Enumerative Geometry: Past, Present, and Future." Undergraduate Seminar, University of Toronto – Scarborough, June 2023.

Selected Awards and Honors

- **E. S. Hammond Mathematics Prize (2024):** Completion of the mathematics major with distinction.
- **Sarah and James Bowdoin Scholar (2022):** (Dean's List) For exceptional overall academic performance.
- **Smyth Mathematics Prize (2022):** For most exceptional performance in mathematics coursework in the first two years of study.
- **$100\pi - \varepsilon$ Prize (2020):** For extraordinary inspiration and joy for the pursuit of mathematics.

Selected Presentations

A full list of presentations is available at `wgabrielong.github.io/talks`.

- "$\mathbb{A}^1$-Brouwer Degrees in `Macaulay2`." at Effective Methods in Algebraic Geometry, Leipzig, Germany, July 2024.
- "Neural Networks and Discriminant Loci of Parametrized Polynomial Systems: First Examples." SIAM Applied Algebraic Geometry, Eindhoven, The Netherlands, July 2023.
- "Enumerative Geometry: Past, Present, and Future." Undergraduate Seminar, University of Toronto – Scarborough, June 2023.
- "Real Circes Tangent to Three Conics." Algebraic Geometry Northeastern Series, UMass Amherst, November 2022.
- "Group Equivariant Neural Networks in Computer Vision." Presented to the Algebraic Vision Network at Czech Technical University – Prague, May 2022.
- "Sentences and Strings: An Introduction to Model Theory." Presented to the Undergraduate Mathematics Society at Columbia University as part of the Summer Learning Seminar 2021.

Service to the Profession

- **Twoples (2025-Present)** Mentor to students from underrepresented groups, non-traditional backgrounds, and/or non-research oriented institutions in semester-long mathematical reading projects.
- **Kleine AT: Even Filtration via Spectral Sequences (2025)** Co-founder of conference series and co-organizer of inaugural edition at MPIM Bonn with T. Barthel and D. Bowman.
- `Macaulay2` **Workshop at U. Wisconsin - Madison (2025)** Project co-leader with S. Pauli on unstable $\mathbb{A}^1$-Brouwer degrees.
- **Bowdoin Science Experience (Fall 2021 & 2022):** Organized an orientation trip introducing students historically underrepresented in the sciences to the Bowdoin science departments and other academic support services.
- **Mathematics Department Tenure-Track Faculty Search (Spring 2020 & 2024):** Assisted in small-group student interviews for the tenure-track faculty searches.
- **Mathematics Department Visiting Faculty Search (Summer 2020 & 2023):** Assisted in small-group student interviews for the visiting assistant professor searches.
- **Bowdoin College Alumni Interviewer (2024, 2025)** Conduct evaluative interviews of prospective applicants to Bowdoin College.

Skills

- **Programming:** Python (TensorFlow, SKLearn, Pandas, NumPy); Julia; Wolfram Mathematica; Lean
- **Computational Skills:** Google Suite, Microsoft Office, LaTeX
- **Languages:** English (Native), Classical Greek (Scholarly), Spanish (Working), Mandarin (Spoken), Malay (Spoken)
- **Certificates and Training:** WMA Wilderness First Responder, PADI Master SCUBA Diver