

Isabel Longbottom

CONTACT: ilongbottom (at) math (dot) harvard (dot) edu

RESEARCH INTERESTS

I am interested in homotopy theory, algebraic K-theory, and algebraic geometry.

EDUCATION

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| 2022-27 (expected) | PhD in Mathematics, supervised by Michael Hopkins
Harvard University
MA in mathematics, November 2023 |
| 2018-21 | Bachelor of Philosophy - Science (Honours), Mathematics major, CS minor
The Australian National University
GPA of 7.00 (out of 7.00), First Class Honours |

PAPERS

SEPTEMBER 2025 *A strong finiteness condition for smashing localisations.* [arXiv:2509.07344](#).

AWARDS AND SCHOLARSHIPS

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| 2023-24 | Raphael and Daniel Salem Fellowship, Harvard |
| 2022 | Attended the IAS/PCMI Undergraduate Summer School |
| 2020 | Alan McIntosh Prize for third year Mathematics, ANU |
| 2020 | Hanna Neumann Prize for third year mathematics, ANU |
| 2020 | Priscilla Fairfield Bok Prize for women in third year science courses, ANU |
| 2020 | Invited to the IAS/PCMI Undergraduate Summer School subsequently cancelled |
| 2019 | Hanna Neumann Prize for second year mathematics, ANU |
| 2019 | Priscilla Fairfield Bok Prize for women in third year science courses, ANU |
| 2018 | Hanna Neumann Prize for first year mathematics, ANU |
| 2018 | Mavis Prater Prize for women in mathematics, ANU |
| JULY 2017 | Tuckwell Scholarship for an undergraduate degree at the ANU |

COMPUTER SKILLS

(alphabetically) Ada, Haskell, Java, \LaTeX , Lean, Macaulay2, Magma, Python, Sage

TALKS

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| APRIL 2025 | <i>Trivial problems and mathematical trivia.</i> Harvard Trivial Notions Seminar. |
| APRIL 2025 | <i>Notions of finiteness for localisations.</i> Harvard Zygotop Seminar. |
| SEPTEMBER 2024 | <i>Intro to equivariant homotopy theory.</i> Harvard Babytop Seminar. |
| AUGUST 2024 | <i>Cyclotomic Frobenius and the Segal conjecture.</i> MIT Talbot workshop. |
| APRIL 2024 | <i>Rational homotopy of the $K(n)$-local sphere.</i> MIT Babytop seminar. |
| APRIL 2024 | <i>The Hopf invariant one problem.</i> Harvard Zygotop seminar. |
| FEBRUARY 2024 | <i>K-theory of the $K(1)$-local sphere via TC.</i> Harvard Thursday seminar. |
| NOVEMBER 2023 | <i>Sylow Theorems for Infinity Groups.</i> Harvard Trivial Notions seminar. |
| OCTOBER 2023 | <i>K-theory from the ground up.</i> Harvard Zygotop seminar. |
| MAY 2023 | <i>On the K-theory of pullbacks and pushouts.</i> Harvard Zygotop seminar. |
| MARCH 2023 | <i>Abouzaid-Blumberg flow categories.</i> MIT Juvitop seminar. |
| NOVEMBER 2022 | <i>A proof of the Pontryagin-Thom theorem.</i> MIT Kan seminar. |
| OCTOBER 2022 | <i>On the cobordism ring and a complex analogue, after Milnor.</i> MIT Kan seminar. |

EMPLOYMENT

FALL 2025	Pedagogy Fellow for MATH300, Harvard Assisted in running the theory course all incoming graduate students in math must take to prepare them to teach at Harvard.
FALL 2023, FALL 2024	Teaching Fellow for MATH1B, Harvard Delivered thrice-weekly calculus classes, helped write and mark exams, gave office hours.
2020, 2021	Demonstrator for MATH1115, MATH1116, MATH2222, and MATH2322, ANU Ran (online and in-person) workshops, marked assignments and exams. TA-equivalent position.
2019	Drop-in tutor, ANU Drop-in tutor for first year courses during the exam preparation period.
2019	Peer-Assisted Learning Mentor for MATH1115 and MATH1116, ANU Junior TA position as a second-year teaching first-year students analysis and linear algebra.

SERVICE

SPRING & FALL 2024	Organiser for the ZYGOTOP SEMINAR, Harvard Learning seminar for young graduate students in algebraic topology.
2023-25	Organiser for REAL REPRESENTATIONS, Harvard Support for underrepresented groups in math. Helped run social lunches and two trivia nights.
JANUARY 2020, 2021, 2022	Tutor at THE NATIONAL MATHS SUMMER SCHOOL, Canberra Tutored at a two-week-long summer program for mathematically able high school students.
DECEMBER 2020	Maths tutor for the CURIOUS MINDS STEM PROGRAM, Online Ran maths problem-solving sessions for rural female-identifying high school students.
2020	Vice President of the ANU MATHEMATICS SOCIETY