Ernest E. Fontes — Curriculum Vitæ

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Education

Ph.D. in Mathematics, The University of Texas at Austin   May 2017

Thesis: "Weight structures and algebraic K-theory of stable ∞-categories" advised by Andrew J. Blumberg.

M.A. in Mathematics, The University of Texas at Austin   December 2012

A.B. in Mathematics, *cum laude* in field, Harvard University   May 2010

Thesis: "A general descent approach for the Picard group of $\mathscr{A}(1)$" advised by Michael J. Hopkins.

Current and Former Positions

Ross Assistant Professor   August 2017–present
Department of Mathematics, The Ohio State University

Graduate Student   September 2010–May 2017
Department of Mathematics, University of Texas at Austin
Advised by Andrew J. Blumberg.

Program Associate in Algebraic Topology   January–May 2014
Mathematical Sciences Research Institute (MSRI)

Papers

Algebraic K-theory for 2-categories: $+ = S^{-1}S$ (with Niles Johnson and Nick Gurski). In preparation.

Weight filtrations on algebraic K-theory and Goodwillie calculus (with Crichton Ogle). In preparation.

Topological cyclic homology of polynomial E_∞-ring spectra (with Truls B. Ræder and Aaron M. Royer). In preparation.

A Fundamental Theorem for the K-theory of connective $\mathbb{S}$-algebras (with Crichton Ogle). Submitted. Preprint at arXiv:1804.00975.

Weight structures and algebraic K-theory of stable ∞-categories. Submitted. Preprint at arXiv:1812.09751.

Teaching Experience

The Ohio State University

Math 6801 (Algebraic Topology I)
Graduate course on fundamental group and homology. Lectured, wrote and graded weekly problem sets, wrote and graded exam. 10 students. Instructor.   Fall 2019 (ongoing)

Math 1152 (Calculus II)
Lectured to 130 students. Part of SEMINAL network "Active Learning in Large Lecture Classrooms" project, leveraging technology to apply active learning techniques in lecture. Instructor.   Fall 2019 (ongoing)

Math 2153 (Calculus III)
Lectured two classes of 75 students each. Helped write exams, oversaw grading. Instructor.   Spring 2019

Math 1151 (Calculus I)
Lectured to 200 students & led recitations of 30 students. Part of SEMINAL network again. Instructor of course as well as TA for one recitation. Fall 2018

Math 1151 (Calculus I): Flipped and Flexible
Taught calculus in a "flipped classroom" with some students attending at a distance via streaming software. Strongly coordinated course with online lectures prepared by department. Recitation instructor for three 30-student classes each semester. Spring 2018, Fall 2017

University of Texas at Austin

Calculus Lab/Learning Assistant Organizer
Organized undergraduate learning assistants in calculus classes and managed shared calculus help lab across all department calculus classes. TA. Spring 2016

Supplemental Instruction (SI) Teaching Assistant
Taught calculus in a "flipped classroom"; conducted weekly sections, held office hours, participated in Sanger Learning Center SI program. TA.

Math 408N: "Differential Calculus" with Prof. Anna Spice Fall 2013

Math 408S: "Integral Calculus" with Prof. Mark M. Maxwell Spring 2013

Directed Reading Program Fall 2015, Fall 2013, Spring 2013
Mentored undergraduates on projects involving algebraic topology, homotopy theory, and category theory; organized program during inaugural semester (Spring 2013).

Teaching Assistant
Taught calculus, conducted weekly sections, held office hours.

Math 408D: "Calculus II" with Prof. Alex Rand Spring 2012

Math 408L: "Integral Calculus" with Prof. Diane Radin Fall 2011

Harvard University

Undergraduate Course Assistant
Led weekly problem sections, held office hours, graded homework and midterm exams.

Math 132: "Topology II: Smooth Manifolds" Spring 2010

Math 131: "Topology I: Topological Spaces and the Fundamental Group" Fall 2009

Math 115: "Methods of Analysis" Fall 2008

Honors, Awards, & Fellowships

Research

Geometry Research and Training Grant (RTG) Fellowship Summer 2016, 2015, 2014,
Department of Mathematics, University of Texas at Austin Summer 2013, Summer–Fall 2012, Fall 2010–Summer 2011

Harvard College Program for Research in Science and Engineering (PRISE) Fellowship Summer 2009

PRISE–Armstrong Research Award Summer 2009

Teaching

Frank Gerth III Teaching Excellence Award May 2014
Honored for outstanding instruction as a teaching assistant by the UT Austin Mathematics Department.

Certificate of Distinction in Teaching from the Derek Bok Center Spring & Fall 2010
Honored for performance as course assistant for Math 131 (with Prof. Clark Barwick) and Math 132 (with Prof. Lydia Bieri).

Service

Workshop on Functor Calculus, The Ohio State University, Columbus, OH March 16–17, 2019
Co-organized weekend workshop on the homotopy calculus of functors for over 45 participants. Plenary speakers, invited talks, and short contributed talks from graduate students.

Special Session on Homotopy Theory, AMS Spring Sectional Meeting at The Ohio State University, Columbus, OH March 2018
Helped organize special session with 20 speakers. Focus on promoting students and early-career researchers.

University of Texas Undergraduate Topology and Geometry Conference (texTAG) 2016 February 2016
Helped organize conference for over 60 undergraduates in topology and geometry.

University of Texas Undergraduate Topology and Geometry Conference (texTAG) 2015 February 2015

Graduate Student Geometry & Topology Conference 2014 April 2014
Helped organize conference for over 170 graduate-student participants, co-wrote grant for NSF funding, invited speakers.

Harvard College Mathematics Review (HCMR) Fall 2007–Spring 2009
Ran and edited undergraduate expository mathematics journal; served as Co–Editor-In-Chief (Fall 2008–Spring 2009) and Issue Production Director (Spring & Fall 2008).

Conferences, Workshops, & Invited Talks

Presenter

AMS Special Session on Homotopy Theory and Algebraic K-Theory, AMS Sectional Meeting — Binghamton University October 2019
"Algebraic K-theory for 2-categories: $+ = S^{-1}S$"

Homotopy Seminar — OSU October 2019
"Algebraic K-theory for 2-categories: $+ = S^{-1}S$"

IU–PU–IUPUI Joint Topology Seminar — IUPUI October 2018
"Weight structures and the algebraic K-theory of stable ∞-categories"

Topology seminar — Johns Hopkins University November 2015
"Weight structures and algebraic K-theory of stable ∞-categories"

Topology seminar — University of Illinois at Urbana–Champaign (UIUC) October 2015
"Weight structures and algebraic K-theory of stable ∞-categories"

Stanford topology progress seminar/"xkcd" group — University of California, Berkeley March 2014
"Localization sequences in and around algebraic K-theory"

MSRI Summer Graduate School: Algebraic Topology — MSRI June 2013
"Categories of modules and their equivalences"

MIT Talbot Workshop: Calculus of Functors May 2012
"Applications to algebraic K-theory II"

Participant

MayDay 2019 — University of Chicago October 2019

International Conference on Manifolds, Groups and Homotopy — Sabhal Mor Ostaig, Isle of Skye, Scotland, UK June 2018

Fall Midwest Topology — University of Kentucky September 2018

Special Session on Homotopy Theory, AMS Spring Sectional Meeting — OSU March 2018

2017 Midwest Topology Summer School on Trace Methods in Algebraic K-Theory — IU August 2017

West Coast Algebraic Topology Summer School — University of Oregon August 2016

Mid-Atlantic Topology Conference — Johns Hopkins University March 2016

Graduate Student Geometry & Topology Conference — UIUC March 2015

West Coast Algebraic Topology Summer School — University of British Colombia July 2014

Reimagining the Foundations of Algebraic Topology — MSRI April 2014

Graduate Student Topology & Geometry Conference — University of Texas at Austin April 2014

Introductory Workshop: Algebraic Topology — MSRI January 2014

Graduate Student Topology & Geometry Conference — University of Notre Dame April 2013

Algebraic Topology: Applications and New Directions — Stanford University July 2012

West Coast Algebraic Topology Summer School — Stanford University July 2012

Graduate Student Topology Conference — IU Bloomington April 2012