

# Matthew Gelvin

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## Basic Statistics

Full name: Matthew Justin Karcher Gelvin  
Date of Birth: June 25, 1983  
Place of Birth: Lafayette, Indiana, United States of America  
Citizenship: USA  
Research Interests: algebraic topology, fusion systems, local group theory, representation theory

## Current Employment

Visiting Assistant Professor  
Bilkent University  
Ankara, Turkey

## Postgraduate Employment

Consulting (WeBWork problem author)		2014-2015
Visiting Assistant Professor	Wesleyan University	2013-2014
Visiting Instructor	Wellesley College	2012-2013
Postdoctoral Research Fellow	University of Copenhagen	2010-2012

## Education

2005-2010 *Massachusetts Institute of Technology* *Ph.D. Mathematics*

Doctorate in mathematics under the supervision of Professor Haynes Miller. Research focus and planned thesis topic were on fusion systems and  $p$ -local finite groups, with particular emphasis on developing the theory of fusion actions on finite sets.

Fall 2009 *Université Paris XIII*

Visiting student at the Laboratoire Analyse, Géométrie et Applications under the supervision of Professor Bob Oliver. Research directed toward thesis and further development of the theory of fusion actions.

2001-2005 *University of Chicago* *B.A. Mathematics*

## Publications

Matthew Gelvin and Sune Precht Reeh, Minimal characteristic bisets for fusion systems. *Journal of Algebra* (2015), doi: 10.1016/j.jalgebra.2014.12.020

M. Gelvin, S.P. Reeh, E. Yalçın, On the basis of the Burnside ring of a fusion system. *Journal of Algebra* (2015), doi: 10.1016/j.jalgebra.2014.10.026

Matthew Gelvin and Jesper M. Møller, Homotopy equivalences between  $p$ -subgroup categories. *Journal of Pure and Applied Algebra* (2014), doi: 10.1016/j.jpaa.2014.10.002

Matthew Gelvin. Fusion action systems. MIT Graduate Thesis (2010).

## Honors

University of Chicago Department of Mathematics Paul R. Cohen Memorial Prize (2005)

Sigma Xi Scientific Research Society (2005)

Phi Beta Kappa Honor Society (2004)

## Conference Presentations

*Minimal characteristic bisets of saturated fusion system*; Special Session of the AMS Fall Central Sectional Meeting; St. Louis, MO; 2013.

*Parametrization of characteristic bisets of a saturated fusion system*; Bisets in Algebra and Topology; Amiens, France; 2012.

*A homotopical version of  $p$ -local finite groups*: AMS Joint Meeting Special Session On Homotopy Theory; Boston, MA; 2012.

*Fusion Action Systems*; 2009 Barcelona Topology Workshop; Centre de Recerca Matemàtica, Universitat Autònoma de Barcelona; Barcelona, Spain; 2009.

*Fusion Systems Acting on Finite Sets*; 5<sup>ème</sup> rencontre du GDR "Topologie algébrique et applications" (Annual conference of the French topology network); Strasbourg, France; 2009.

## Departmental Presentations

*Minimal characteristic bisets of fusion systems*; Boğaziçi University Colloquium; 2015.

*Fusion systems, bisets, and group-like structures*; Bilkent University Colloquium; 2015.

Lectures on characteristic bisets of fusion systems; Universitat Autònoma de Barcelona; 2014.

*Fusion systems, characteristic bisets, and broken chains*; Wesleyan University; 2014.

*Minimal characteristic bisets of saturated fusion systems*; Wesleyan Colloquium; 2013.

*Parametrization of characteristic bisets of a saturated fusion system*; MIT; 2012.

*What is a  $p$ -local finite group?*; MIT; 2011.

*Fusion Action Systems*; Wesleyan University, University of Copenhagen; 2010.

*Fusion Action Systems*; IRMA, Université de Strasbourg; 2009.

*Fusion Systems Acting on Finite Sets*; Indiana, Copenhagen, Paris XIII; 2009.

*Actions of Fusion Systems on Finite Sets*; University of Chicago, Northwestern University; 2009.

## Teaching

**Undergraduate.** †=recitation leader/course assistant. \*=grader. RC=reading course.

<i>Class</i>	<i>Title</i>	<i>School</i>	<i>Date</i>
Math 101	Calculus I	Bilkent	Fall 15×2
Math 222	MultivariableCalculus	Wesleyan	Spring 14
Math 228	Differential Equations	Wesleyan	Spring 14
Math 402	RC ( $p$ -adic numbers)	Wesleyan	Spring 14
Math 121	Calculus I	Wesleyan	Fall 13
Math 228	Discrete Mathematics	Wesleyan	Fall 13
Math 401	RC (character theory)	Wesleyan	Fall 13
Math 116	Calculus II	Wellesley	Spring 13
Math 115	Calculus I	Wellesley	Fall 12, Spring 13×2
18.03†	Differential Equations	MIT	Spring 06, Spring 07×2
18.901*	Introduction to Topology	MIT	Fall 05, Fall 06
Math 161-163†	Honors Calculus	U. of Chicago	04-05
Math 270*	Basic Complex Variables	U. of Chicago	Fall 04
Math 151-153†	Calculus	U. of Chicago	03-04
Math 131-133†	Elem. Functions and Calculus	U. of Chicago	02-03

**Graduate.** †=exercise sessions. \*=grader.

<i>Class</i>	<i>Content</i>	<i>School</i>	<i>Date</i>
AlgTopII†	Algebraic topology	Copenhagen	Winter 12
CatTop†	Simplicial sets and homotopy	U. of Copenhagen	Winter 11-12
AlgGeo	Intro algebraic geometry	U. of Copenhagen	Fall 11
CatTop†	$p$ -local finite groups	U. of Copenhagen	Winter 10-11
AlgIII	Group and module theory	U. of Copenhagen	Fall 10
18.905*	Algebraic Topology	MIT	Fall 08

**Seminars.** Organizer and frequent speaker.

<i>Seminar</i>	<i>Topics</i>	<i>School</i>	<i>Date</i>
Fusion	Fusion, blocks, and bisets	Bilkent	Fall 15
Algebra	Fusion and block theory	U. of Copenhagen	Fall-Winter 10

**Conferences.** Organizer and leader of supplementary problem sessions.

<i>Conference</i>	<i>Location</i>	<i>Date</i>
Fusion Systems and $p$ -local Group Theory	U. of Copenhagen	July 11

**High school/outreach.** Counselor for University of Chicago's Young Scholars Program, a supplemental mathematics program for Chicago-area junior high and high school students. Weekends during school year (02-05), 6 week intensive program in Summer (02, 03).

**Pedagogy training.** Participant in University of Copenhagen's Adjunktprædagogikum, a teacher-training course for postdocs and junior faculty at the University. 2011.

## References

Prof. Mark Hovey	Wesleyan University	mhovoy@wesleyan.edu
Prof. Haynes Miller	MIT	hrm@math.mit.edu
Prof. Jesper M. Møller	Univserity of Copenhagen	moller@math.mku.dk
Prof. Bob Oliver	Paris XIII	bobol@math.univ-paris13.fr
Dr. Kári Ragnarsson	Google	kari.ragnarsson@gmail.com
Prof. Ergün Yalçın	Bilkent University	yalcine@fen.bilkent.edu.tr