THE OHIO STATE UNIVERSITY

GRADUATE PROGRAMS IN MATHEMATICS

An Overview for Prospective Students

CONTENTS

GENERAL INFORMATION

Degrees

The Ohio State Department of Mathematics offers a Ph.D. degree program with two tracks, one in *Theoretical Mathematics* and the other in *Applied Mathematics*. Applications are invited once a year and students are only admitted to the Autumn Semester as their first semester of study.

In addition, we offer a *Master of Actuarial and Quantitative Risk Management (MAQRM)*. Students may apply for admission to the MAQRM program either for the Autumn or Spring semester.

Applications

The department invites applications to all degree programs once a year for admission to the autumn semester. Application deadline for full consideration for all degrees and tracks is **December 10th**. Applications received by the end of January are often still considered in later rounds of admission but will not be eligible for university fellowships. Detailed information about the application procedure and expected preparations can be found at

<div align="center">

https://math.osu.edu/grad/future/apply

</div>

Contacts

All inquiries from prospective students and communication about our program and application procedures should be directed to

<div align="center">

grad-info@math.osu.edu

</div>

The email account will also be used during our recruitment and admission season to extend offers of admission or inform students about their waitlist status.

Faculty & Research

Graduate Faculty

There are currently **65** professors on the Columbus campus who serve as graduate faculty in the mathematics doctoral and master's programs. Additionally, there are **22** faculty on branch campuses with graduate faculty status, many whom supervise theses and dissertations of graduate students on the main campus. Thus, doctoral and master's students in our program can choose among at least **87** expert researchers to serve as their dissertation and thesis advisors.

Our graduate faculty is actively engaged in creating a vigorous research environment through top-level research publications, an abundance of research seminars, numerous sources of grant support, a large visitor and post-doctoral program, frequently hosted conferences of national and international reach, as well as research collaborations all over the world.

Several joint faculty appointments between our department and departments in various life science disciplines, computer science, and statistics underscore interdisciplinary research opportunities in our research program. Other OSU units collaborating with professors in our department include, for example, our medical center, physics, computer science and engineering, as well as education.

Professors in our department are also deeply invested in continuously developing and improving graduate education through many curricular innovations. These include the introduction of new degree tracks, reviews and adjustments of existing ones, many updates to course offerings, as well as special mentoring and scientific activities. Below are a few more highlights about our faculty:

♦ **Eight** of our junior faculty have won prestigious *NSF-CAREER* awards in the last five years. Over the recent years **five** of our incoming faculty were awarded the prestigious *Sloan Fellowships*.

♦ **Thirteen** of our faculty members are *Fellows of the American Mathematical Society*.

♦ Moreover, **four** faculty in our program are *AAAS Fellows*, one of whom is serving as chair-elect of the mathematics section of AAAS. Also, **one** of our faculty is a member of the *National Academy of Science,* and several more members of our program have had prestigious invitations as speakers to the *International Congress of Mathematicians* in recent years.

♦ A consistent majority of our faculty hold external research grants that are often used to support graduate students.

Institutional Strengths and Opportunities

As one of the largest research institutions in the country, The Ohio State University provides a thriving and ambitious environment for a broad range of scientific endeavors.

Our *Center for Topological and Geometric Data Analysis*, a collaboration between the Mathematics, Computer Science, and Statistics Departments on campus, has attracted over $4 million in federal

and individual funding, including a highly competitive TRIPODS grant. The support and visibility provided by the TGDA center not only makes OSU the premier location for research in applied topology in the country but also benefits graduate students in the area through fellowship support.

The *Mathematical Biosciences Institute* (MBI, see http://mbi.osu.edu/) at Ohio State is the focal point of our large research group in mathematical biology. The group includes about ten mathematics professors in addition to numerous interdisciplinary appointments and affiliated faculty from other departments.
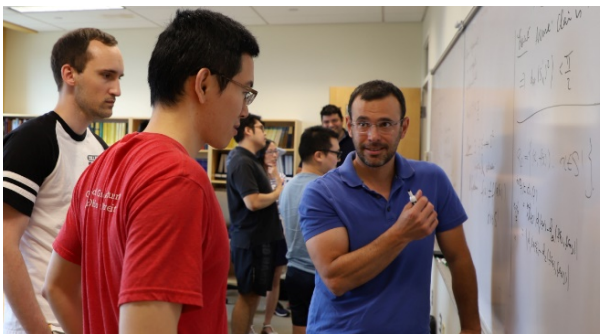
The *Mathematics Research Institute* (MRI, see http://www.mri.osu.edu) combines department and college resources as well as external grants to fund a variety of conferences, special years on selected topics, visitor programs, scientific seminars, and academic travel.

The large size of our faculty as well as the size of the university provides many opportunities across all other areas and in various other aspects.

Beginning students can enroll in a wide range of regularly offered graduate courses that equip them with a broad intellectual formation and solid skill sets in many disciplines of mathematics. These include 43 standard doctoral level courses and 37 master level courses that provide thorough training in all essential mathematical techniques. Additional course offerings include about 6-10 research level topics courses per year, hundreds of courses from other STEM departments, as well as informal learning seminars and working groups organized by our faculty.

The breadth of our research program is an ideal environment also for students who wish to explore several different topics before deciding on a particular research direction, for students who wish to work at the interface of several sub-disciplines of mathematics, or for students who are interested in interdisciplinary studies between mathematics and other STEM areas.

Indeed, professors in our department work jointly with top scientists all over the world within their own specializations. Many research projects involve collaborations between colleagues in our program from adjacent but different fields of mathematics and numerous others are interdisciplinary projects that include professors from different natural sciences and engineering departments around campus extending to many other fields beyond the centers mentioned above. The variety of scientific perspectives merging in our overlapping research groups is, thus, a unique and exciting strength of our program. It not only leads to groundbreaking research results but also establishes an extensive network of scientific connections that has clearly benefitted job placements of our graduates.

New Hires and Innovative Directions

New faculty hires over the last few years have additionally invigorated our research program by strengthening core areas and adding original new research directions. Several recent additions have emphasized research that combines computational methods with topics in pure mathematics, often with novel cross-disciplinary components.

Recent faculty hires have been in some of the most active and quickly evolving areas and specializations. On the more theoretical side these include topology (probabilistic and applied topology, homotopy theory, modern low-dimensional topology, geometric groups theory), several modern directions of algebraic geometry (combinatorial, arithmetic, tropical), harmonic analysis,

modern algebra and representation theory (operator algebras, quantum groups, category theory), probability theory and combinatorics (including statistical graph theory, random matrices, networks), ergodic theory and dynamical systems, computational number theory, as well as complex analysis. In applied mathematics recent hires have been in computational mathematics (uncertainty quantification, fluid dynamics, data science, optimization), statistical mechanics and signal processing, non-linear particle differential equations, as well as mathematical biology.

In addition, our research program is further energized by about 30 post-doctoral fellows and long-term visiting professors. They participate in seminars and working groups and often collaborate not only with professors but also graduate students. Some also assist in graduate level instruction and help organize academic activities for graduate students. The continuous influx of young talent at the post-doctoral level adds to the scientific versatility and perspectives of our department and provides graduate students with additional connections to the greater scientific community.

Traditional Strengths and Other Areas

The mathematics department has a long history in algebra, combinatorics, and number theory, counting renowned mathematicians such as Henry Mann, Marshall Hall, Arnold Ross, and Hans Zassenhaus among its faculty members over the past 70 years. Zassenhaus was one of the founders of the Journal of Number Theory which was housed in our department for several decades. Other former colleagues in algebra and combinatorics played pivotal roles in the solution of famous problems such as the classification of finite simple groups or the four-color problem.

Today our group in analytic number theory is highly visible in the scientific community, regularly organizes programs and conferences, and has a strong record of job placements of its graduates. Combinatorics is a central subject of study and important tool within many of the research fields in our department.

Another traditional strength of our program is in ergodic theory, including its intriguing intersections with number theory and dynamical systems. This branch of mathematics is strongly represented in our program both by world renowned faculty as well as one of the largest groups of graduate students, who regularly go on to highly competitive post-doctoral programs and faculty positions.

At least a dozen of our graduate faculty members are engaged in research in partial differential equations (PDE), pursuing a wide range of approaches to the topic, and several more in differentiable dynamical systems. PDE are studied, for example, in the context of geometric analysis, asymptotic analysis, non-linear integrable systems, and free boundary problems. Applied research in differential equations in our program includes systems in mathematics biology, fluid dynamics, mathematical physics, stochastic PDEs, and numerical analysis of PDEs.

Much of the mathematics involved in this area ties into our prolific research groups in PDE, dynamical systems, and applied mathematics, but also benefits from collaboration with life science departments, medical units across campus, and many post-docs visiting the MBI each year. Similarly, other faculty working in applied mathematics and numerical analysis maintain lively collaborations with Ohio State's large engineering and computer science departments.

Besides our more recent developments in topological and geometric data analysis our department has a traditionally strong group in topology and geometry with a sizable number of professors,

graduate students, and post-doctoral fellows. Specializations include geometric group theory, geometric and low-dimensional topology, homotopy theory and K-theory, as well as various other directions in differential and algebraic topology.

In addition, several smaller, yet very active, research groups complement the wide spectrum of mathematics represented in our program. These encompass, for example, logic and foundations, complex analysis of several variables, differential geometry and geometric analysis, non-commutative geometry and operator algebra, representation and Lie theory, ring and group theory, as well as mathematical physics and financial mathematics.

Exploring our Faculty

The attached list of current and incoming graduate faculty at our department contains keyword descriptions of their research as well as their contact information. Interested students should feel free to contact faculty directly with questions about their research. (The organization by subject area in the list is in many cases somewhat arbitrary since research areas have become more and more cross-disciplinary).

The *Invitations to Mathematics* is a weekly student colloquium with lectures delivered by members of our graduate faculty and visited by all beginning doctoral students. The lectures series has helped students gain an early overview of research conducted in our program and connected them to future dissertation advisors. Browsing the lecture announcements and abstracts may serve as an additional source of topics that are researched at our department.

GRADUATE STUDENT LIFE

Demographics

There are about 157 students in our graduate program, of which about 126 are pursuing doctoral degrees and the remaining are enrolled in one of our master's programs. Nearly a quarter of our graduate students are female and 18% of our domestic graduate students are from traditionally underrepresented groups. The nationalities represented in our department across all graduate degrees are illustrated in the chart on the right. Students enter the program coming from a wide range of institutions, from small liberal arts colleges to large research universities and with similarly diverse educational backgrounds, including both bachelor's and master's degrees. We, therefore, have ample experience and resources to accommodate widely varying academic and personal backgrounds that students bring to our program.

Legend: USA, Latin America, Europe, Commonwealth, China, Korea, India, Middle East, Other Asia
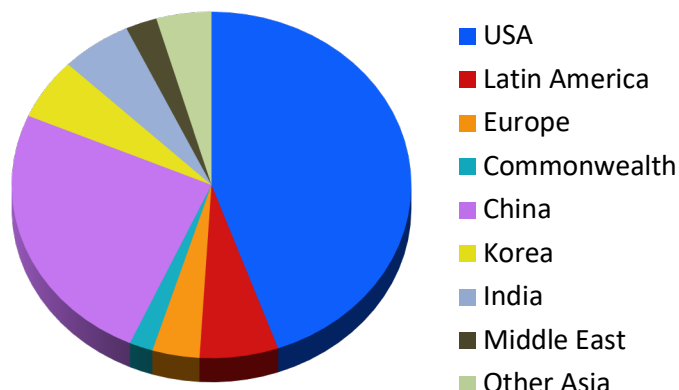
Mentoring and Informal Training

Our program recognizes that the growth of students into professional mathematicians can be supported through many other activities outside of the conventional classroom and thesis advising settings.

One of these is our first-year mentoring program for interested beginning doctoral students. Faculty mentors are available to help students in their first semesters to adjust to the pace and rigors of graduate studies, coach them in finding their way into a new community and guide them in planning their work and graduate career.

This activity has been established as an integral part of our membership as a Doctoral Program Group in the National Math Alliance and, further, underscores our commitment to enhance diversity at the program and national level.

The *Erdős Institute* (erdosinstitute.org) is an initiative based in our department that seeks to provide opportunities for mathematics graduate students to better prepare themselves for careers outside of academia. It has a considerable network of relations with over 30 employers from the private and government sector and collaborates with other departments and big state schools.

One of the central activities is the *Invitations to Industry* lecture series, in which former graduate students or representatives from companies seeking to recruit mathematics graduate students give regular talks on career opportunities and qualities valued by private employers. In addition, the Erdős Institute organizes coding bootcamps and helps find internships for interested graduate students.

Additionally, we are currently establishing a scientifically oriented professional development seminar that is targeted towards advanced doctoral students who want to pursue academic research careers in mathematics. A similar seminar is offered on a regular basis to students interested in academic careers with emphasis on teaching.

Student Community

Student-driven and organized activities define much of the social and academic environment of graduate students in our department. They both promote and are evidence of a cohesive, cooperative, and supportive graduate student community.

For example, the local chapter at OSU for the *Association for Women in Mathematics* (AWM) was founded by our graduate students. It maintains an active program including invited speakers, panel discussions, and information sessions. The chapter is advised by Professor Keyfitz, a former president of the AWM.

Furthermore, the department has an active chapter of the *Society for Industrial and Applied Mathematics* (SIAM) which regularly organizes talks and panel discussions for students with interest in applied mathematics.

The *Mathematics Graduate Student Association* (MGSA) is an OSU-registered student organization established and run entirely by our graduate students. One of its main activities is weekly lectures by students for students from all areas of mathematics, excluding faculty but including pizza. In addition, the MGSA fosters community by organizing regular social events and game nights, disseminating student support information, and maintaining lists of student-run seminars.
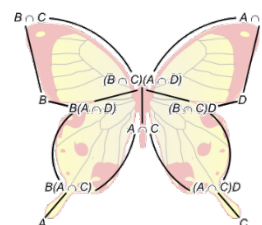
There are many further settings for more research-oriented interactions as well. Particularly, there are at least half a dozen exclusively student-run and attended seminars that provide informal, low-pressure venues to learn about basic notions and explore research topics.

Additionally, informal working seminars in various research areas involve a mix of faculty, post-docs, and graduate students and facilitate approaches to research in a vertically integrated fashion.

Students often collaborate with faculty from other departments at Ohio State as well as faculty at other institutions. It is also not unusual for students in our program to collaborate on research projects and to coauthor published articles.

Shared offices provide an environment in which groups easily form that work together on course assignments, exam preparations, or grading in the beginning years. Particularly noteworthy is our newly renovated and furnished *First Year Office* for beginning Ph.D. students, which ensures a high level of cohesion within our recent cohorts. Graduate students show support by helping each other through courses and examinations, peer-mentoring incoming students, and nominating each other for teaching awards.

Further informal and social interactions occur in the lounge rooms and daily tea area, during our annual departmental picnic and special events, as well as outside the department, encompassing a wide range of extracurricular activities.

DOCTORAL (PH.D.) PROGRAM

The Doctor of Philosophy degree enables its recipients to conduct independent research, produce original scholarly work, and serve in faculty positions at colleges and universities. We believe that the Mathematics Graduate Program at The Ohio State University provides a tremendously broad and exciting range of high-caliber research opportunities and a faculty that is uniquely dedicated to graduate advising.

Academic Progression & Curriculum

The path to our Ph.D. degree is divided into two parts separated by the candidacy exam. In the pre-candidacy portion students complete their course and examination requirements and in the post-candidacy years they focus almost entirely on their dissertation research.

Moreover, our Ph.D. program is divided into two tracks, namely, a *Theoretical Mathematics* and an *Applied Mathematics* track. The two tracks differ only in the pre-candidacy requirements, which are typically completed during the first and second years. Students in either track have the same choice of advisors and there are no restrictions on the topic of the dissertation research. A student completing requirements in the theoretical track may later embark in applied research, or vice versa. However, students need to declare one of the two tracks in their application in order to allow our admission committee to properly evaluate the student's preparations.

Our qualifying requirements in the theoretical track focus on our two doctoral-level, year-long sequences in Abstract Algebra and Real Analysis. Students may pass this requirement by passing courses with sufficiently high grades or test out of them by participating in our annual qualifying examinations. The qualifying requirements in the applied track include a mandatory course in Numerical Methods and Scientific Computing, one of the already mentioned algebra and analysis courses, as well as three additional courses from shorter list of applied and theoretical topics.

In addition, students in each track fulfill our breadth requirements. For most students in the theoretical track this implies taking an additional year-long course sequence in another area. The respective requirement for student in the applied track is more flexible but includes at least one course from a list of approved graduate course offered by STEM departments other than mathematics.

The candidacy examination, typically taken during the third year of study, consists of a dissertation research proposal that is submitted and defended by the doctoral candidate. More details about our program requirements can be found on our web page at

https://math.osu.edu/grad.

Median time to graduation is currently just under six years. Our faculty are constantly working on streamlining the training of students in order to achieve lower times to graduation, while also maintaining strong job placements and the integrity of the doctoral degree.

The doctoral completion rate (from entry to degree) has steadily improved over recent years and we currently estimate this ratio to be around or exceeding 75% – which is significantly above the national average of about 50%.

Financial Support

All PhD students in good academic standing are supported either as Graduate Teaching Associates (GTAs), Graduate Research Associates (GRAs), or University Fellows (UF) during the regular academic year. In all cases support includes a full tuition waiver. Students who have been supported in the nine months of the preceding academic year also have an automatic summer tuition waiver regardless of summer support. Additionally, GA and UF support includes a generous (85%) subsidy of health insurance premiums. Beyond first year fellowships for selected students fulfilling university criteria, there are also additional fellowship and support opportunities for more advanced students.

Every year the department offers between 25 and 40 fellowships that support students for one semester without teaching duties at regular stipend levels in order to allow them to focus on their research, complete their thesis or other academic projects, or travel to workshops and conferences. Additional fellowships are generated from a large NSF training grant in Pure and Applied Topology, several individual NSF CAREER grants, as well as large grants in computational mathematics.

Many more graduate faculty members in our department hold research grants that can support students on GRAs. In addition, a limited number of teaching and research positions are available for summer support each year. Typically, over 90% of all students who remain on campus over the summer and apply for and receive financial support from one of these sources.

Students in their dissertation years can also compete for the highly prestigious Presidential Fellowships which our graduate school awards to the very best students in the entire university. Our program is among the top seven programs on campus that win most of these awards every year.

During the 2018-19 academic year, an average of nearly 40% of our Ph.D. students were fully supported *without* teaching duties during regular terms (28% in Autumn and 49% in Spring). In particular, *all* doctoral students newly admitted to OSU in 2019 have been supported without having to teach, allowing them to focus entirely on their academic work.

Finally, the department makes travel funds available that allow students to visit conferences, workshops, and collaborators. Many students take advantage of this opportunity to connect to the larger scientific community, collaborate outside of the program, present their work, and, thus, improve their chances in securing academic jobs.

Graduations and Job Placements

Over the past four years our doctoral program has awarded on average about twenty Ph.D. degrees per year. The great majority of our graduating students have one or more articles published or in submission by the time of their graduation, and many have started active outside collaborations before moving on to their first academic job.

In the last two years a large majority of our Ph.D. graduates won post-doctoral research positions at competitive schools, including *UCLA, Stanford, ETH-Zürich, Brown University, University of Michigan, Northwestern University, University of Vienna, EPF Lausanne, Free University at Berlin, Purdue University, University of Utah,* and other major research universities.

Placements in the previous seven years include, in addition, prestigious US schools such as *Princeton University, IAS Princeton, University of Chicago, Yale University, MSRI, Cal-Tech, University of Minnesota, University of Texas, Rutgers University, Duke University,* and *Vanderbilt University.*

Further post-doctoral placements at renowned international schools include *Technion-Israel, University of Bristol,* and *University of Southampton.*

Other graduates continue academic careers as professors in smaller, teaching-oriented colleges and universities. Each year some of our students also enter private industry careers such as in software development, finance, and R&D, and occasionally some enter government agencies such as the NSA. Still others pursue additional doctoral degrees, for example, in physics or financial mathematics.

The department typically accommodates its recent graduates who are still looking for academic jobs with lecturer positions for at least a year until they find employment that aligns with their career goals.

MASTER OF ACTUARIAL AND QUANTITATIVE RISK MANAGEMENT

The Master of Actuarial and Quantitative Risk Management (MAQRM) is a professional graduate degree program which was approved in 2016 and has steadily grown since then. The design of this master's degree is based on a tremendously successful undergraduate degree program in actuarial sciences that our department has been offering for over 35 years.

The MAQRM provides a curriculum that combines training in modern mathematical finance and actuarial risk management - two areas that have become increasingly intertwined, creating a demand for graduates that have acquired expertise in both.

The curriculum includes newly developed courses in risk management and financial stochastic calculus as well as a practicum course. Several of these courses are taught by highly accomplished practitioners in the finance and actuarial science industries. In addition, students will be exposed to courses in actuarial sciences, financial economics, statistics, and numerical analysis. Sample curricula can be found at the following link:

<p align="center">https://math.osu.edu/grad/current/MAQRM</p>

The program utilizes well-established connections to the statewide insurance industry, as well as other businesses involved in risk management, in order to create practical experiences and additional mentoring during the two years of study in the program. Students have won internships with private companies concurrent with their studies in the MAQRM.

These connections and experiences have been instrumental in job placements of our recent graduates, including positions at Nationwide Insurance, KeyBank, DHL, Humana, Encova Insurance, Westfield Insurance, and others.

As opposed to our Ph.D. program, students in the MAQRM will not be supported by Graduate Associateships.

GRADUATE FACULTY LIST

Find below the current list of graduate faculty available for dissertation and thesis advising for all degrees. The list includes basic research interests as well as contact information. Prospective students should feel free to contact any faculty member about their research. Since most of our faculty are not directly involved in the admission process, any questions about applications should be directed by email to grad-info@math.osu.edu.

Number Theory

Cogdell, James — PhD: Yale University (1981)
COLUMBUS — cogdell.1@osu.edu — 614-292-8678
Research: Number Theory, Analytic Number theory, L-functions - Converese Theorems.

Hiary, Ghaith — PhD: University of Minnesota (2008)
COLUMBUS — hiary.1@osu.edu — 614-292-4013
Research: Computational number theory, analytic number theory, random matrix models for L-functions, asymptotic analysis & interests in probability and numerical analysis.

Holowinsky, Roman — PhD: Rutgers University (2006)
COLUMBUS — holowinsky.1@osu.edu — 614-292-3941
Research: Number Theory: Analytic Methods, Automorphic forms, L-functions, Sieve Methods, Quantum Unique Ergodicity

Luo, Wenzhi — PhD: Rutgers University (1993)
COLUMBUS — luo.43@osu.edu — 614-292-5751
Research: Number Theory, Analytic and Arithmetic Theory of Automorphic Forms and Automorphic L-Functions

Park, Jennifer — PhD: Mass. Inst. Tech. (2014)
COLUMBUS — park.2720@osu.edu — 614- 688-5773
Research: Number Theory and Algebraic Geometry, Algebraic Curves and Arithmetic Properties, Number and Function Fields.

Friesen, Christian — PhD: Brown University (1989)
MARION — friesen.4@osu.edu — 614-292-9133
Research: Algebraic & Computational Number Theory: continued fractions. class groups in quadratic function fields.

Algebraic Geometry

Anderson, David — PhD: University of Michigan (2009)
COLUMBUS — anderson.2804@osu.edu — 614-292-5754
Research: Algebraic geometry, Combinatorics, Representation theory, Schubert varieties and toric varieties, Equivariant cohomology and its applications

Ban, Chunsheng — PhD: Purdue University (1990)
COLUMBUS — ban.1@osu.edu — 614-292-5331
Research: Algebraic Geometry - Singularity Theory - Mathematical Finance.

Cueto, Angelica — PhD: Univ. of California at Berkeley (2010)
COLUMBUS — cueto.5@osu.edu — 614-688-5773
Research: Algebraic Geometry, Combinatorics, Non-Archimedean Geometry, Tropical Geometry

Joshua, Roy — PhD: Northwestern University (1983)
COLUMBUS — joshua.1@osu.edu — 614-292-4014
Research: Algebraic and Arithmetic Geometry, K-Theory, Singular Varieties, Computational aspects of geometry, Quantum computation

Katz, Eric — PhD: Stanford University (2004)
COLUMBUS — katz.60@osu.edu — 614-247-1988
Research: Tropical Geometry, Combinatorial Algebraic Geometry, Arithmetic & Enumerative Geometry,

Tseng, Hsian-Hua — PhD: Univ. of California at Berkeley (2005)
COLUMBUS — tseng.109@osu.edu — 614-292-5581
Research: Algebraic Geometry, Symplectic Topology & Geometry, Mirror Symmetry, Gromov-Witten Theory

Caibar, Mirel   PhD: University of Warwick (1999)

MANSFIELD   caibar.1@osu.edu   614-688-3177

Research: Algebraic Geometry, Singularity Theory, Hodge Theory

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Kennedy, Gary   PhD: Columbia University (1981)

MANSFIELD   kennedy.28@osu.edu   419-755-4291

Research: Algebraic Geometry, Enumerative geometry, Intersection theory

Ring & Module Theory

Herzog, Ivo   PhD: University of Notre Dame (1989)

LIMA   herzog.23@osu.edu   419-995-8293

Research: Ring Theory, Module and Representation Theory, Category Theory

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Rizvi, Syed Tariq   PhD: McMaster University (1981)

LIMA   rizvi.1@osu.edu   419-995-8211

Research: Theory of Rings and Modules, Injective/Projective Modules, Baer Modules and Rings, Rickart Modules, Ring and Module Hulls and their applications.

Roman, Cosmin   PhD: The Ohio State University (2004)

LIMA   roman.37@osu.edu   419-995-8644

Research: Ring Theory, Module Theory, Injectivity-Like Properties , Relations Between Modules and Their Endomorphisms Ring, Theory of Rings and Modules

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Yousif, Mohamed   PhD: University of Calgary (1986)

LIMA   yousif.1@osu.edu   419-995-8368

Research: Rings and Modules, Injective and Continuous Rings and Modules, Pseudo and Quasi-Frobenius Rings

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Loper, Kenneth   PhD: University of Wisconsin (1985)

NEWARK   loper.4@osu.edu   740-366-3321

Research: Commutative Rings, Nagata & Kronecker Function Rings, Prüfer-like and almost Dedekind domains

Pure & Applied Topology & Computational Geometry

Broaddus, Nathan   PhD: Columbia University (2003)

COLUMBUS   broaddus.9@osu.edu   614-292-0605

Research: Geometric Group Theory, Topology, Low-dim Topology

Davis, Michael   PhD: Princeton University (1975)

COLUMBUS   davis.12@osu.edu   614-292-4886

Research: Topology, Geometric Group Theory, Aspherical Manifolds & Spaces, Non-positive Curvature

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Dey, Tamal   PhD: Purdue University – Computer Science

COLUMBUS   dey.8@osu.edu   614-292-3563

Research: Computational geometry, computational topology, geometric modeling, computer graphics, mesh generation

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Fiedorowicz, Zbigniew   PhD: University of Chicago (1975)

COLUMBUS   fiedorowicz.1@osu.edu   614-292-0724

Research: Algebraic Topology, Algebraic K-theory, Homotopy theory, Quantum Groups, Category Theory

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Fowler, James   PhD: University of Chicago (2009)

COLUMBUS   fowler.291@osu.edu   614-292-4019

Research: Topology, Geometric Topology of Manifolds, Geometric Group Theory, Surgery Theory, K-Theory, MOOCs

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Gogolyev, Andrey   PhD: Pennsylvania State Univ (2009)

COLUMBUS   gogolyev.1@osu.edu   614-292- 0348

Research: Topology, Geometry, Dynamical Systems, Hyperbolic Dynamics

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Kerler, Thomas   PhD: ETH-Zurich - Theor. Physics (1992)

COLUMBUS   kerler.2@osu.edu   614-292-5252

Research: Topology, 3-dim Manifolds and Knots Invariants, Topological Quantum Field Theories, Mapping Class Groups, Quantum Algebra

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Krishnan, Sanjeevi   PhD: University of Chicago (2006)

COLUMBUS   krishnan.118@osu.edu   614-292-8434

Research: Algebraic Topology and Applications to Optimization, Data Analysis, and dynamics.

Lafont, Jean-Francois   PhD: University of Michigan (2002)

COLUMBUS   lafont.1@osu.edu   614-292-5814

Research: Topology - Differential Geometry, Geometric Group Theory - K-Theory

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Mémoli, Facundo   PhD: University of Minnesota (2005)

COLUMBUS   memoli.2@osu.edu   614-292-5585

Research: Shape comparison, Computational Topology, Topological data analysis, Machine learning.

Ogle, Crichton   PhD: Brandeis University (1984)

Columbus   ogle.1@osu.edu   614-292-0836

Research: Topology - K-Theory

Chmutov, Sergei   PhD: Moscow State University (1985)

Mansfield   chmutov.1@osu.edu   419-755-4287

Research: Topology, Knot Theory, Quantum Invariants

Chrisman, Micah   PhD: Univ of Hawai'i – Manoa (2006)

Marion   chrisman.76@osu.edu   740-725-6023

Research: Knot Theory, Low-Dimensional Topology, Virtual knots, Finite-type Invariants, Knot Concordance, Generalized Cohomology Theories.

Harper, John   PhD: University of Notre Dame (2008)

Newark   harper.903@osu.edu   740-755-7854

Research: Topology, Homotopy Theory, Modules over Operads, K-Theory & TQ-Homology.

Johnson, Niles   PhD: University of Chicago (2009)

Newark   johnson.5320@osu.edu   740-755-7856

Research: Topology, Categorical and Computational Aspects of Algebraic Topology, Picard/Brauer theory .

Rao, Vidhyanath   PhD: Case Western Reserve (1981)

Newark   rao.3@osu.edu   740-366-9341

Research: Topology - Homotopy Theory - K-Theory

Yau, Donald   PhD: Massachusetts Institute of Technology

Newark   yau.22@osu.edu   740-366-9197

Research: Topology, Algebra, Hom-Lie algebras, Deformations

Differential Geometry

Derdzinski, Andrzej   PhD: Uniwersytet Wrocławski (1976)

Columbus   derdzinski.1@osu.edu   614-292-4012

Research: Differential Geometry - Einstein Manifolds

Guan, Bo   PhD: University of Massachusetts (1992)

Columbus   guan.19@osu.edu   614-292-6897

Research: Partial Differential Equations - Geometric Analysis

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Stenzel, Matthew   PhD: MIT (1990)

Newark   stenzel.3@osu.edu   740-366-3321

Research: Differential Geometry, Several Complex Variables

Combinatorics, Probability & Graph Theory

Falkner, Neil   PhD: University of British Columbia (1978)

Columbus   falkner.1@osu.edu   614-292-8025

Research: Probability Theory, Brownian Motion

Kahle, Matthew   PhD: University of Washington (2007)

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Research: Combinatorics, Probability Theory, Geometric Group Theory, Mathematical Physics, Topology, Topological Data Analysis

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Nguyen, Hoi   PhD: Rutgers University (2010)

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Research: Combinatorics - Probability Theory - Random Matrices - Number Theory

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Paquette, Elliot   PhD: University of Washington (2013)

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Research: Probability Theory, Random Geometry, Random Matrices, Probabilistic Combinatorics.

Sivakoff, David   PhD: University of California, Davis (2010)

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Research: Stochastic Processes on Large Finite Graphs, Probability Theory, Applications to Percolation Models, Particle Systems, Epidemiology, Sociology, and Genetics.

Maharry, John   PhD: The Ohio State University (1996)

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Research: Graph Theory, Combinatorics

Stan, Aurel   PhD: Louisiana State University (1999)

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Research: Stochastic Analysis, Harmonic Analysis, Quantum Probability, Wick Products.

Xu, Murong   PhD: Virginia Tech University (2018)

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Research: Discrete Mathematics, Graph Theory, Complex Networks, Optimization.

Real & Complex Analysis

Costin, Ovidiu — PhD: Rutgers University (1995)

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Research: *Analysis, Asymptotics, Borel Summability, Analyzable Functions, Applications to PDE and difference equations, Time dependent Schrödinger equation, Surreal numbers.*

Koenig, Kenneth — PhD: Princeton University (2000)

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Research: *Several Complex Variables, Szegöő & Bergman Projections, ∂--Neumann problem*

Lang, Jan — PhD: Charles University, Prague (1996)

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Research: *Analysis, Differential Equations, Harmonic Analysis, Function Spaces, Integral Inequalities, PDE - Function Theory*

McNeal, Jeffery — PhD: Purdue University (1988)

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Research: *Several Complex Variables, Bergman Projections, Cauchy-Riemann Complexes, L^2-Cohomology on Complete Manifolds, ∂--Neumann problem*

Vivas, Liz — PhD: University of Michigan (2009)

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Research: *Holomorphic Dynamical Systems, Several Complex Variables, Complex Geometry & Affine Algebraic Geometry, Monge-Ampere equations and CR manifolds.*

Logic

Carlson, Timothy — PhD: University of Minnesota (1978)

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Research: *Combinatorics, Foundations of Mathematics & Logic, Ramsey Theory, Distributed Systems, Infinitary Combinatorics, Inner Model Theory*

Miller, Chris — PhD: Univ. Illinois, Urbana-Champaign (1994)

COLUMBUS — miller.1987@osu.edu — 614-292-9363

Research: *Logic, Model Theory, Applications to Analytic Geometry & Geometric Measure Theory*

Partial Differential Equations

Costin, Rodica — PhD: Rutgers University (1997)

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Research: *Partial Differential Equations, Difference Equations, Orthogonal Polynomials, Asymptotic Analysis*

Keyfitz, Barbara — PhD: New York University (1970)

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Research: *Partial Differential Equations, Non-Linear PDE, Hyperbolic Conservation Laws*

Kodama, Yuji — PhD: Clarkson & Nagoya University (1980)

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Research: *Differential Equations, Mathematical Physics, Integrable Systems, Nonlinear PDEs, Lie Algebras, Field Theories, Applications to Physical and Engineering Problems, Topological Questions Related To Differential Equations*

Tanveer, Saleh — PhD: California Institute of Technology (1984)

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Research: *Applied Mathematics, Asymptotics, Nonlinear Free boundary problems in Fluid Mechanics and Crystal Growth, PDEs in Fluid Mechanics & Mathematical Physics, Singularity & regularity questions in PDEs*

Tian, Fei-Ran — PhD: New York University (1991)

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Research: *Partial Differential Equations, Zero Dispersion & Semi-Classical Limits, Whitham Equations, Modulation of Dispersive Oscillations, Free Boundary Problems*

Tiglay, Feride — PhD: University of Notre Dame (2004)

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Research: *Partial Differential Equations, Mathematical Physics, Dynamical Systems, Wave Equations & Fluid Dynamics*

Mathematical Biology & Numerical Analysis

Best, Janet — PhD: Cornell University (2004)

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Research: Applied Mathematics, Mathematical Biology, Dynamical Systems, Circadian Rhythms, Probability Theory, Stochastic Processes on Random Graphs

Chou, Ching-Shan — PhD: Brown University (2006)

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Research: Computational & Mathematical Biology, Systems Biology of Cell Polarity, Numerical Algorithms for Hyperbolic Problems, Conservation Schemes & Laws

Dawes, Adriana — PhD: University of British Columbia

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Research: Mathematical Biology, Mathematical Modeling of Cell Polarization & Chemotaxis, Differential Equations

Friedman, Avner — PhD: Hebrew University (1956)

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Research: PDEs, Mathematical Biology, Stochastic differential equations, Control Theory, Free Boundary Problems

Golubitsky, Martin — PhD: MIT (1970)

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Research: Dynamical Systems, Bifurcation Theory, Networks, Neuroscience, Symmetry in Chaos

Hamilton, Ian — PhD: Simon Fraser University - Biology

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Research: Behavioral Ecology, Coerced Cooperation, Evolution of Cooperative Behavior, Mathematical Modeling

Lam, Adrian — PhD: University of Minnesota (2011)

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Research: Partial Differential Equations, Mathematical Biology, Evolutionary Game Theory, Free-boundary Problems.

Lou, Yuan — PhD: University of Minnesota (1995)

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Research: Partial Differential Equations, Applications in Population Biology, Nonlinear Elliptic and Parabolic Systems

Terman, David — PhD: University of Minnesota (1980)

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Research: Applied Mathematics, Differential Equations, Mathematical Biology, Dynamical Systems, Computational Neuroscience

Tien, Joseph — PhD: Cornell University (2007)

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Research: Mathematical Biology, Models of Infectious Disease Dynamics, Differential Equations, Parameter Estimation, Neuroscience

Xing, Yulong — PhD: Brown University (2006)

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Research: Numerical Analysis, Scientific Computing, Wave propagation, Computational Fluid Dynamics.

Xiu, Dongbin — PhD: Brown University (2004)

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Research: Scientific Computing, Numerical Mathematics, Stochastic Computation, Uncertainty Quantification, Multivariate approximation, Data Assimilation, High-order Numerical Methods.

Xue, Chuan — PhD: University of Minnesota (2008)

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Research: Mathematical Biology & Medicine, Multiscale & hybrid modeling, Computation & Analysis, Moving boundary problems, Phase behavior & Stochastic methods in Biology

Other Applied Mathematics Mathematical Physics

Abdalkhani, Javad — PhD: Dalhousie University (1983)

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Research: Applied Mathematics, Integral Equations, Numerical Analysis

Huang, Yong (Russ)   PhD: The Ohio State University (1989)

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Research: *Differential Equations, Optimal Control*

Pandey, Bishun   PhD: Banaras Hindu University (1980)

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Research: *Applied Mathematics*

Ergodic Theory

Bergelson, Vitaly   PhD: Hebrew University of Jerusalem

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Research: *Ergodic Theory, Combinatorics, Ergodic Ramsey Theory, Polynomial Szemeredi Theorems, Number Theory*

Leibman, Alexander   PhD: Israel Institute of Technology

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Research: *Ergodic Theory, Dynamics on Nil-Manifolds, Polynomial Szemerédi & van der Waerden Theorems*

Shah, Nimish   PhD: Tata Institute (1994)

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Research: *Ergodic Theory, Ergodic Theory on Homogeneous Spaces of Lie Groups , Applications To Number Theory*

Thompson, Dan   PhD: University of Warwick (2009)

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Research: *Ergodic Theory, Dynamical Systems, Symbolic Dynamics, Thermodynamic Formalism, Dimension Theory & Geometry*

Representation Theory, Operator Theory, Harmonic Analysis

Casian, Luis   PhD: Mass. Inst. Tech. (1983)

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Research: *Representation Theory, Representation Theory of Real Semisimple Lie Groups, Integrable Systems*

Gautam, Sachin   PhD: Northeastern University (2011)

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Research: *Representation Theory of Infinite-Dimensional Quantum Groups, Classical and Quantum Integrable Systems*

Mixon, Dustin   PhD: Princeton University (2012)

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Research: *Applied Harmonic Analysis, Mathematical Signal Processing, Compressed Sensing*

Moscovici, Henri   PhD: University of Bucharest (1971)

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Research: *Non-commutative Geometry and Applications to Geometry, Topology and Number Theory*

Penneys, David   PhD: Univ. California, Berkeley (2012)

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Research: *Operator algebra, von-Neuman Subfactors, Fusion and Tensor Categories, Mathematical Physics, Non-commutative Geometry.*

Taylor, Krystal   PhD: University of Rochester (2012)

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Research: *Harmonic Analysis, Geometric Measure Theory, Harmonic Analysis on Fractals, Applications to Analytic Number Theory.*

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