

PROMOTION RECOMMENDATION  
The University of Michigan-Flint  
College of Arts and Sciences  
Department of Mathematics

Cameron McLeman, assistant professor of mathematics, Department of Mathematics, College of Arts and Sciences, is recommended for promotion to associate professor of mathematics, with tenure, Department of Mathematics, College of Arts and Sciences.

Academic Degrees:

Ph.D.	2008	University of Arizona, Tucson
B.S.	2002	Harvey Mudd College, Claremont, California

Professional Record:

2012 – Present	Assistant Professor of Mathematics, University of Michigan-Flint
2010 – 2012	Adjunct Assistant Professor, University of Michigan-Flint
2008 – 2010	Visiting Assistant Professor, Willamette University, Salem, Oregon

Summary of Evaluation:

Teaching – Professor McLeman is an outstanding teacher of mathematics using most any metric one chooses – number of different courses, numeric evaluations, or student and peer commentaries of his teaching. Such excellence in teaching is grounded in a deep commitment to learning and an appreciation – if not passion for – the difficulty inherent in the acquisition of new insights and understanding in mathematics. By embracing and overcoming the fear of learning difficult concepts or solving new problems, Professor McLeman has become an extremely effective teacher who consistently promotes student learning. Indeed, as Professor McLeman notes, “you can’t make progress rectifying a lack of understanding until you’re conscious of its absence.” Professor McLeman also fully embraces and applies his so-called “pro-difficulty credo” to his own learning as steadfastly demonstrated by the number of different classes he has taught since the fall semester of 2010. Since his arrival at the University of Michigan-Flint, Professor McLeman has taught 28 different courses, not including the supervision of 42 senior theses/capstone projects and numerous directed reading and independent study courses. Given that he has taught 34 classes at UM-Flint, the fact that 28 are unique courses means that Professor McLeman is constantly developing new preparations – or as he would view it, he is constantly increasing and solidifying his mastery of his content knowledge. Professor McLeman’s passion for learning (for his students and himself) makes him an outstanding teacher who exceeds the college’s expectations for its standards of promotion and tenure in the area of teaching effectiveness.

Research – Professor McLeman is a theoretical mathematician specializing in number theory and graph theory. Since his appointment in 2010 and with five peer-reviewed articles already to his credit, Professor McLeman has published an additional nine peer reviewed articles and has received five invitations to be a featured researcher or speaker at national and international conferences. In his specialization of number theory, Professor McLeman’s scholarship focuses on understanding the

failure of unique factorization through the study of class groups of number fields via elliptic curves and class field towers. Or, as one external reviewer noted, Professor McLeman's body of work in number theory enriches "our knowledge and understanding of class field towers, and thereby our insight into abelian and solvable extensions of number fields, an essential part of number theory." In addition, Professor McLeman has initiated work in the area of algebraic graph theory that utilizes the tools of algebra to study a given network of objects – that is, the properties of the set of vertices (objects) and the properties of their connections (edges). Finally, Professor McLeman has published in the area of fractal geometry, where he and his students explore the Hausdorff dimension notion and its application to fractals. With 14 publications and two in progress, some in leading journals in his field, Professor McLeman has established himself solidly within the field of number theory.

#### Recent and Significant Scholarly Activity:

##### *Peer-Reviewed Journal Articles*

- McLeman, C., †Cotton, N. and Pinchock, D. (2015). "On Combining and Convolving Fractals." *College Mathematics Journal*, Vol. 46-2, pp. 99-108.
- McLeman, C. and Maire, Christian (2014). "On  $p_2$ -Ranks in the Class Field Tower Problem." *Annales Mathématiques Blaise Pascal*, Volume 21-2, pp. 57-68.
- McLeman, C. and McNicholas, Erin (2014). "Graph Invertibility." *Graphs and Combinatorics*, 30 (4), pp. 977-1102.
- McLeman, C. and Moody, D. (2013). "Class Numbers via 3-Isogenies and Elliptic Surfaces." *International Journal of Number Theory* 9, no. 01, pp. 125-137.
- McLeman, C. and Rasmussen, C. (2012). "Class Numbers via 2-Isogenies of Elliptic Curves." *Bulletin of the London Mathematical Society*, 44, Part 6, pp. 1221-1236.

\* Undergraduate Student Co-Author

† Master's Student Co-Author

##### *Conference Presentations*

- McLeman, C. (2016). "An Entirely Random Approach to Algebraic Number Theory." *Michigan Mathematics Meetings, Hillsdale College, Michigan, (April)*.
- McLeman, C. (2014). "Cohen-Lenstra Partitions and Class Groups of Quadratic Imaginary Number Fields." *Fall Southeastern Meeting of the American Mathematics Society, Greensboro, North Carolina, (November)*.
- McLeman, C. (2014). "Combining and Convolving Fractals." *Michigan Mathematics Meetings, Flint, Michigan, (May)*.
- McLeman, C. (2013). " $p$ -Groups as Class Groups of Quadratic Imaginary Number Fields." *Workshop on pro- $p$ -Groups and Arithmetic, Besancon, France, (December)*.

Service – Professor McLeman has amassed an impressive and meaningful record of service to his department, college, university and professional community. For the Department of Mathematics, Professor McLeman has assumed responsibility for coordinating the program's assessment of student learning, and has also been appointed as the director of the Masters of Arts in Mathematics program. Additionally, Professor McLeman has devoted a significant amount of time to working with students. Beyond the department, Professor McLeman has offered his time and energies to the college's LEO Review Committee and the Spring Interim Committee. For the university, he

has served on the Technology Committee, the Committee on the Economic Status of the Faculty, the General Education Curriculum Committee, and the Technology Fee Committee. Finally, Professor McLeman is a contributing member of his profession by serving as a peer reviewer for several journal articles, contributing several reviews for articles appearing on the American Mathematical Society's article database MathSciNet. In addition to participating in both online and offline mathematical communities such as mathOverflow.net and math.stackexchange.com, Professor McLeman also writes, reviews, and edits for the Illustrative Mathematics website, and has contributed descriptive text for exhibits at the newly-opened Museum of Modern Mathematics in New York City.

#### External Reviewers:

Reviewer (A): "As for the quality of his research, it is very good... It's notable how many of his papers are joint, some with more senior mathematicians (Maire, Joshi, ...), some with Master's students, some with undergrads. My impression is that he is a driving force in all of these projects... The candidate's status in relation to his peer group is one of being highly regarded... ...every so often, [he] comes out with some clever idea that makes people take notice."

Reviewer (B): "He was an invited speaker at many seminars and national meetings, he refereed a number of research articles in prestigious journals including *Bulletin of the London Mathematical Society*, and he wrote reviews to papers in *MR (Mathematical Reviews)*."

Reviewer (C): "I fully expect his work to generate significant new results in the field, both from him and from other mathematicians he inspires."

Reviewer (D): "[Concerning the breadth of scholarship] the ability to branch out into fields during an Assistant Professorship (such as McLeman has done) is an impressive mark of a researcher who can grow professionally for many years beyond acquiring tenure... [Regarding Dr. McLeman's work on refine the Golod-Shafarevich criteria] the 'McLeman Conjecture' is a well-known statement that I and some of my collaborators have a strong interest..."

Reviewer (E): "The results I described above constitute serious, substantial contributions to number theory."

Reviewer (F): "This paper ['Infinite Hilbert Class Field Towers from Galois Representations'] also shows Dr. McLeman's interest and mastery of some sophisticated tools in modern number theory, and his clever use of them to obtain significant new results of great interest... The work of Dr. Cameron McLeman is of very high quality. His most outstanding work belongs to number theory, where his work is top quality. This particular work addresses difficult fundamental questions dating back 200 years, and often using sophisticated methods, Dr. McLeman, occasionally with collaborators, is able to reach new results of great current interest which advance our knowledge of these subjects in a fundamental way."

Reviewer (G): "In closing, I would like to reiterate that Dr. McLeman's research program over the last several years has been of a high level, including the quality and quantity of his results... He is poised to continue on with an impressive research career."

Reviewer (H): “Most of his number theory work is associated with elliptic curves. These are solid publications which address interesting and challenging questions and which appeared in [sic] respected well journals.”

Summary of Recommendation:

Professor McLeman is a theoretical mathematician specializing in number theory and graph theory. With 14 peer-reviewed publications to his credit and an additional under review – some in the top journals of his discipline – as well as numerous invitations to be a featured researcher or speaker at national and international conferences, Professor McLeman has firmly established himself as a respected scholar in the area of number theory. Concerning Professor McLeman’s teaching, all indicators underscore that he is clearly an outstanding teacher of mathematics – whether one uses the number of different courses, the aggregated results of his numeric course evaluations, or student and peer commentaries of his teaching. Such excellence in teaching is grounded in a deep commitment to learning and an appreciation – if not passion for – the difficulty inherent in the acquisition of new insights and understanding in mathematics. Finally, Professor McLeman’s record of service is as solid as those for his teaching and scholarship. While service may simply be done out of necessity, Professor McLeman’s personal goal is to engage in service that is meaningful and provides opportunities for explicit growth for himself, his students, college, university and professional community. With enthusiasm and great pride, I recommend that Cameron McLeman be promoted to associate professor of mathematics, with tenure, Department of Mathematics, College of Arts and Sciences.

Recommended by:



---

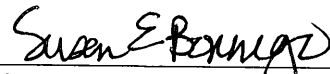
Susan Gano-Phillips, Dean  
College of Arts and Sciences

Recommendation endorsed by:



---

Douglas G. Knerr, Provost and  
Vice Chancellor for Academic Affairs



---

Susan E. Borrego, Chancellor  
University of Michigan-Flint

May 2017