Approved by the Regents
May 21, 2020

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Arts, Sciences, and Letters

Thomas M. Fiore, associate professor of mathematics, with tenure, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters, is recommended for promotion to professor of mathematics, with tenure, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters.

Academic Degrees:

Ph.D.	2005	Mathematics, University of Michigan, Ann Arbor, MI
B.S.	1999	Mathematics, University of Pittsburgh, Pittsburgh, PA
B.Phil.	1999	German, University of Pittsburgh, Pittsburgh, PA

Professional Record:

2015 – 2016	Humboldt Fellow, Fakultät für Mathematik, Universität Regensburg
2013 – present	Associate Professor of Mathematics, Department of Mathematics and Statistics, University of Michigan-Dearborn
2009 – 2013	Assistant Professor of Mathematics, Department of Mathematics and Statistics, University of Michigan-Dearborn
2008 – 2009	L.E. Dickson Instructor, Department of Mathematics, University of Chicago
2007 – 2008	Profesor Visitante, Departament de Matemàtiques, Universitat Autònoma de Barcelona
2005 – 2007	L.E. Dickson Instructor, Department of Mathematics, University of Chicago

Summary of Evaluation:
Teaching: Professor Fiore, a dedicated educator, regularly teaches a wide range of courses in mathematics and statistics, from linear algebra which is typically taken by sophomores majoring in engineering and the sciences to the topology course elected regularly by mathematics majors. His work in redesigning the topology course as a capstone experience is highly valued. Students find him knowledgeable, helpful, and passionate about the material and they appreciate his clear communication and organization. While he maintains high standards for student work, he receives high numerical scores on student evaluations. His classroom observations demonstrate his growth as an educator, as he has evolved to provide more opportunities for student engagement and active learning. Outside the classroom, his advocacy for students has made a positive impact on campus. He has increased college accessibility by promoting and adopting open source software, educational products, and older textbook editions. Serving as program advisor, Professor Fiore improved the advising process for students majoring in mathematics and applied statistics so that students have opportunities to meet regularly with faculty. Professor Fiore has also organized a repository of classroom materials to allow faculty to share resources and collaborate more efficiently.

Research: Professor Fiore's research interests focus on algebraic topology and mathematical music theory. In the area of algebraic topology, his work investigates the structure of transformations that map geometric spaces into algebraic objects in order to better understand geometric spaces. In one significant result, Professor Fiore reproves the theorem of Waldhausen additivity using quasicategories. In addition to minimizing some of the technical difficulty associated with the classical result, his work demonstrates new results in quasicategory theory. His research in mathematical music theory expands on the classical mathematical structure of transformations developed to analyze music. In this area, Professor Fiore has used his mathematical training to provide significant structural tools and features necessary for transformational music analysis. His work in mathematical music theory has been recognized on a national level as he received the prestigious Hasse Prize for expository papers appearing the Mathematical Association of America's journals. He has also been awarded a Humboldt Fellowship for Experienced Researchers.

Recent and Significant Publications:

Fiore, Thomas M. and Pieper, Malte. (2019). "Waldhausen Additivity: Classical and Quasicategorical," *Journal of Homotopy and Related Structures*, vol. 14, issue 1, pp. 109-197.

Fiore, Thomas M., Lang, Alexander, and Perucca, Antonella. (2018). "Tactile Tools for Teaching: An Implementation of Knuth's Algorithm for Mastering Mastermind," *The College Mathematics Journal*, vol. 49, no. 4, pp. 278-286.

Fiore, Thomas M. and Thomas Noll. (2018). "Voicing Transformations of Triads," *SIAM Journal on Applied Algebra and Geometry*, vol. 2, no. 2, pp. 281-313.

Berry, Cameron and Fiore, Thomas M. (2018). "Hexatonic Systems and Dual Groups in Mathematical Music Theory," *Involve: A Journal of Mathematics*, vol. 11, no. 2, pp. 253-270.

Fiore, Thomas M., Noll, Thomas, and Satyendra, Ramon. (2013). "Morphisms of Generalized Interval Systems and PR-groups," *Journal of Mathematics and Music*, vol. 7, no. 1, pp. 3-27.

Service: Professor Fiore has provided important contributions to the Department of Mathematics and Statistics by serving on the department Executive Committee and in his role as an undergraduate program advisor. In his role as program advisor, he improved the advising process, revitalized promotional materials, and has worked with alumni to facilitate networking opportunities for current students. Outside the department, he has served on the Senate Assembly for two years, on the Research Support Committee for three years, and the College of Arts, Sciences, and Letters Executive Committee for one semester. In the professional community, Professor Fiore has made a significant impact as the co-editor-in-chief for the *Journal of Mathematics and Music* and has contributed many editorials and announcements. He serves on editorial or advisory boards for several other well-respected publications and has refereed numerous articles in his areas of expertise.

External Reviewers:
Reviewer A: "Over all [sic], I'm very impressed with Tom Fiore's recent work. His is an impressive and impressively curious intellect, and he is making valuable contributions in a number of domains."

Reviewer B: "Although these three papers invest in a single tranche of mathematical music theory, the area is a rich one and Fiore has explored it with greater mathematical depth and rigor than many. Thomas Fiore is a force to be reckoned with in mathematical music theory, and, so far as I know, is deeply admired by scholars in the field generally."

Reviewer C: "[I]n the interdisciplinary subfield of transformational theory within mathematical music theory, [Fiore] is the leading light, having placed the subject on a firm foundation, and having organized it on a high level."

Reviewer D: "This paper is a remarkably clear and explicit presentation of relatively simple mathematical structures with great musical impact. It proves Dr. Fiore's capability to work not only on very abstract levels of algebraic K-theory, but also on concrete levels with significant semantic charge in music theory."

Reviewer E: "His research is situated along that of the top echelon of American scholars who are working in mathematical modeling of musical structures. It is rigorous, well written, and carefully researched, and has had a significant impact especially on the transformational branch of music theory."

Summary of Recommendation:
Professor Fiore is a talented and well-respected mathematician who has shown a serious commitment to student learning. In his research, he has attained significant and important results in the areas of algebraic topology and mathematical music theory. He is dedicated to student success and engagement at all levels. We are very pleased to recommend, with strong support of the College of Arts, Sciences, and Letters Executive Committee, Thomas M. Fiore for promotion to professor of mathematics, with tenure, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters.

Martin J. Hershock, Dean
College of Arts, Sciences, and Letters

Domenico Grasso, Chancellor
University of Michigan-Dearborn

May 2020