

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

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

Academic Degrees:

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

Professional Record:

2009 – Present	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, Chicago, IL
2007 – 2008	Profesor Visitante, Departament de Matemàtiques, Universitat Autònoma de Barcelona, Bellaterra, Spain
2005 – 2007	L.E. Dickson Instructor, Department of Mathematics, University of Chicago, Chicago, IL

Summary of Evaluation:

Teaching: Professor Fiore's teaching is rated excellent. His excellence in the classroom is attested to by his students and by the external teaching observations of Professor's Fink and James of UM-Dearborn. In addition, he has initiated two developments that have already had far reaching teaching implications for the entire department. The first of these is the introduction to the faculty of WeBWorK, an open-source online homework system for math and science courses. In addition to facilitating its use in 100- and 200-level courses, he has conducted workshops for faculty and most recently submitted an NSF grant proposal with WeBWorK's usage as its central theme. A second initiative prompted by Professor Fiore is the cross-department use of M+Box to share course materials (syllabi, quizzes, homework sets, tests) by uploading them for colleagues to view, borrow, and interrogate – prompting discussions around best practices. His experience teaching three NSF-funded Research Experiences for Undergraduates at the University of Chicago has already served a number of our most outstanding upper level students with formal and informal meetings, both mathematical and advisory in nature.

Research: Professor Fiore's research is rated excellent. One facet of pure mathematics concerns abstraction of the familiar: modern algebra is an abstraction of algebra, topology an abstraction of set theory. Category theory represents another abstraction built upon these abstractions. We agree with the judgments of our diverse pool of seven external reviewers that Professor Fiore's research represents a tour de force in this scientific domain. Their collective comments highlight

his national and international reputation, acknowledge the number of lengthy substantive articles, laud the excellence of the venues in which his book and articles appear, speak to the novelty of his methods vis-à-vis his thesis advisor's, and commend his excellent scholarship. Particularly noteworthy is his work in applying mathematics to music theory. One such contribution, "Musical Actions of Dihedral Groups," (with A. Crans and R. Satyendra), in the *American Mathematical Monthly* (2009), won the Mathematical Association of America's biennial Merten M. Hasse Prize for the best paper appearing in an Association publication. Our judgment is that Professor Fiore's papers contain innovative ideas of the highest caliber. His prominence in mathematics applied to music theory is underscored by his recent appointment as an editor-in-chief at the *Journal of Mathematics and Music*.

Recent and Significant Publications:

Thomas M. Fiore, Dorette Pronk, and Simona Paoli. Model structures on the category of small double categories, *Algebraic and Geometric Topology*, Volume 8, Number 4, 1855-1959, 2008. 103 pages.

Alissa Crans, Thomas M. Fiore, and Ramon Satyendra. Musical actions of dihedral groups, *American Mathematical Monthly*, Volume 116, Number 6, June–July 2009, pp. 479-495. 17 pages.

Thomas M. Fiore. *Pseudo Limits, Biadjoints, and Pseudo Algebras: Categorical Foundations of Conformal Field Theory*, *Memoirs of the AMS*, 182, No. 860, 2006. 171 pages.

Service: Professor Fiore's service is rated excellent. He has brought the Math Club back to life, organizing 17 talks in three years, and was a formal and informal advisor to math majors. He has served on the WeBWorK Committee and, with a colleague, submitted an NSF grant to expand its usage on other campuses. He was appointed to the Pure Math Search Committee in AY 2011-2012, where he and his colleagues screened over 400 applicants, and interviewed in person, on Skype, or by phone over 40 candidates. At the same time he was elected to the Department Executive Committee, where he played a key role in developing internal policies concerning math faculty travel. Beyond the department, Professor Fiore has served on the Research Support Committee for UM-Dearborn (Grant Proposal Evaluation). He serves on the editorial board of the *Journal of Mathematics and Music*, has organized special sessions and minisymposia at the Joint Mathematics Meetings, and is a reviewer and referee for *MathSciNet Reviews* and *Zentralblatt Reviews*.

External Reviewers:

Reviewer A: "I consider the whole opus outstanding, and am impressed by the way it is thematic, imaginative, sounded in excellent scholarship, and developing in its range and applications."

Reviewer B: "Fiore has a very impressive record of publications. Many of the papers are in excellent journals, such as *Advances in Mathematics*, *Journal of Pure and Applied Algebra* and *Algebraic and Geometric Topology*, and many of them are also quite long, with substantial, technical content that is explained very clearly."

Reviewer C: "I was delighted to see the appearance of the article 'Musical Actions of Dihedral Groups,' which Professor Fiore coauthored with Alissa Crans and Satyendra, in the *American Mathematical Monthly* in 2009. Like most *Monthly* articles, this one does not offer much that is

new to specialists in the field, but it is a well-presented introduction to many of the concepts involved, aimed for an audience of professional mathematicians who are largely unversed in mathematical music theory. By virtue of its appearance in the *Monthly*, this article is sure to be widely read and to attract the attention of others to our field.”

Reviewer D: “Prof. Thomas Fiore’s scholarly contributions are excellent. I am impressed by the diversity and quality of his research. His paper with Paoli on n-fold categories and his papers with Luck and Sauer on Euler characteristics are outstanding. I would rank him above his collaborators Gambino, Kock, Paoli, and Pronk.”

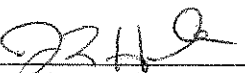
Reviewer E: “While these papers are heavily motivated by the vision of Kriz (who was Fiore’s advisor), the approach and the rigorous study of higher category theory is very different from Kriz’s usual set of tools and recognizable as Fiore’s distinct voice.”

Reviewer F: “His research is situated in 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. Interdisciplinary work at this high level is in my opinion among the most valuable contributions not only to the respective fields, but to scholarship and academia in general.”

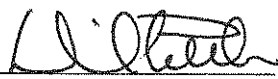
Reviewer G: “For an August 2005 PhD, his accomplishments are outstanding. In this field, fourteen papers in top journals, including the memoir, seven years out from a PhD, is a great achievement. He is a vital and enthusiastic research mathematician. My expectation is that Tom will continue producing significant mathematical research.”

Summary of Recommendation:

Professor Fiore has been rated excellent in the areas of teaching, research, and service. He has been successful in the classroom and has influenced teaching in the department at a programmatic level on several fronts. His research output is extraordinary with excellent scholarly work appearing in a wide variety of excellent publications. His service is likewise extraordinary rising to each challenge presented, and self-starting three innovative projects. 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 associate professor of mathematics, with tenure, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters.



Jerold L. Hale
Dean
College of Arts, Sciences, and Letters



Daniel Little
Chancellor
University of Michigan-Dearborn

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