Approved by the Regents
May 17, 2018

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

Kelly A. Jabbusch, 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. 2007	Mathematics, University of Washington, Seattle, WA
B.S. 2000	Mathematics, Willamette University, Salem, OR

Professional Record:

2012 – present	Assistant Professor of Mathematics, Department of Mathematics and Statistics, University of Michigan-Dearborn, MI
2011 – 2012	Visiting Assistant Professor, Department of Mathematics and Computer Science, Valparaiso University, Valparaiso, IN
2009 – 2011	Post-doctoral researcher or fellow, Royal Institute of Technology (KTH), Stockholm

Teaching: Professor Jabbusch is rated excellent in teaching. This judgment is based upon her student evaluations, peer classroom observations and supplemental curriculum activities. Professor Jabbusch has taught twenty-two lower division courses, eight upper division courses, and two independent study courses since joining the faculty in fall 2012. Student assessments of her courses are uniformly high in terms of their average numerical responses; the open-ended comments praise her enthusiasm, passion, knowledgeability and student engagement. Teaching observations by senior colleagues corroborate the student assessments. Technology plays an integral part of her teaching in the form of online homework (WeBWorK) and use of the Canvas learning management system.

Research: Professor Jabbusch is rated excellent in research. This judgement is based upon her five articles published on top-tier journals in the field of Algebraic Geometry and eight strong external reviewer letters. All reviewers are experts in the field who are internationally and nationally known scholars in their research fields so their assessments are authoritative.

Recent and Significant Publications:

J. Clifford, K. Jabbusch, M. Lachance: Preimages of the numerical range. Accepted for publication on May 3, 2017. To appear in *The American Mathematical Monthly.*

S. Di Rocco, K. Jabbusch, G. Smith: Toric vector bundles and parliaments of polytopes. Accepted for publication on Feb 2, 2017. To appear in *Transactions of the AMS.* arXiv:1409.3109.

S. Di Rocco, K. Jabbusch, A. Lundman: A note on higher order Gauss maps. *Michigan Math. J.*, Vol. 66(1), 2017, pp 21-35.

K. Jabbusch and S. Kebekus: Families over special base manifolds and a conjecture of *Campana. Mathematische Zeitschrift*: Volume 269, Issue 3, 2011, pp 847-878.

K. Jabbusch and S. Kebekus: Positive sheaves of differentials coming from coarse moduli spaces. *Annales de l'institut Fourier*, 61 no. 6, 2011, pp 2277-2290.

Service: Professor Jabbusch is rated significantly capable in service. Professor Jabbusch's service contributions at the department level include serving as undergraduate program advisor on the department Lecturers' Employee Organization Review Committee, faculty mentor for Mathematics Club as well as at the college level, which include serving on the college's Chancellor's Medallion Winners selection committee and as department representative on the college's Curriculum Committee.

External Reviewers:
Reviewer A: "Kelly's research program represents a broad range of problems in algebraic geometry, including various aspects of vector bundles and sheaves, toric varieties, positivity, and families of canonically polarized varieties. It is impressive to see the depth of Kelly's work on a broad range of problems."

Reviewer B: "Dr. Jabbush has worked in different areas of algebraic geometry, producing a good number of papers some of which have appeared in good journals such as Transactions of the AMS, Annales de l'Institut Fourier, and Mathematische Zeitschrift…Dr. Jabbusch appears to have shifted focus in her more recent work. Her collaboration with Sandra Di Rocco and Greg Smith, for instance, sets up a combinatorial framework to study toric invariant vector bundles on toric varieties, the case of rank one being classically well understood…It seems likely that this approach will be further developed and broadly used to study toric vector bundles."

Reviewer C: "Her work on positive cotangent bundles gives a way to find and study them, leading to new examples beyond the case of surfaces. The proofs used nice geometric constructions and a good use of Chern classes."

Reviewer D: "Jabbusch works on important and influential problems concerning a number of different themes and her nine published papers have appeared in very high quality journals such as Annales de l´ınstitut Fourier, the Michigan Mathematical Journal (twice), Transactions of the American Mathematical Society, and Mathematische Zeitschrift…One of the central themes in algebraic geometry is to study varieties that are birational to a given varietyX. Jabbusch's work tackles this problem from different angles, using generalizations of classical methods, as well as engaging in the development of the minimal model program, which is arguably one of the most fundamental and active areas of current research in algebraic geometry."

Reviewer E: "I hope it is clear from the above discussion that Dr. Jabbusch has done interesting work, on a broad range of topics. Her papers address important problems. The attention they

have received is clear from the invitations that Dr. Jabbusch received to speak, in various seminars and conferences, over the years. "

Reviewer F: "The first thing impressed me about Jabbusch's work is the intellectual range that it reflects. Her first paper ('Positivity of cotangent bundles') is about varieties with quasi-ample cotangent bundles, which do not contain any rational curves. In contrast, much of her recent work is on toric varieties, which are about as far away from the previous examples as one can get in the world of projective algebraic varieties. In addition, her results span a spectrum from the very abstract (especially in her early papers) to the very concrete, as exemplified in her work on toric varieties…"

Reviewer G: "In summary, when looking at Dr. Jabbusch's research, I see some clear themes with contributions to the study of the positivity of vector bundles as well as to the area of toric varieties…The materials in Dr. Jabbusch's file indicate that she has established a niche for herself in a mainstream research community where she continues to find high-level collaborators."

Reviewer H: "She and her coauthors recast Klyachko's description in a very appealing way—it involves collections of polytopes (whence 'parliament,' as a collection of owls is a parliament of owls)—and it allows further questions to be addressed about toric vector bundles. Last autumn at the Fields Institute, there was a working group studying this paper and using its methods to construct new and interesting examples of toric vector bundles with the intention of investigating long-standing conjectures in the area. Her paper and its applications was one of the most interesting things that I learned during my sabbatical last year. I like this work very much."

Summary of Recommendation:
Professor Jabbusch has been rated excellent in the areas of teaching and research; and significantly capable in service. She has been an outstanding instructor in the classroom and has done some cutting-edge research work with her collaborators. She has made important service contributions to the department and the college. We are pleased to recommend, with strong support of the College of Arts, Sciences, and Letters Executive Committee, Kelly A. Jabbusch for promotion to associate 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

Daniel Little, Chancellor
University of Michigan-Dearborn

May 2018