PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Thomas Lam, associate professor of mathematics, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of mathematics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:
Ph.D.   2005   Massachusetts Institute of Technology
B.Sc.   2001   University of New South Wales

Professional Record:
2009 – present   Associate Professor, Department of Mathematics, University of Michigan
2007 – 2009   National Science Foundation Post-doctoral Fellow, American Institute of Mathematics
2005 – 2009   Benjamin Pierce Assistant Professor, Department of Mathematics, Harvard University
2005   Clay Liftoff Fellow

Summary of Evaluation:
Teaching – Professor Lam has taught a diverse set of courses in the four years he has been on the faculty at Michigan, and his teaching evaluations have been uniformly excellent. This is especially impressive when one considers that it was his first experience with these courses, which includes a large lecture calculus class. Professor Lam has also done an excellent job in courses primarily designed for students in the mathematics Ph.D. program. He has attracted two students to write their dissertations under his supervision.

Research – Professor Lam has gained a reputation as a leader in his field of algebraic combinatorics and representation theory. He is a prolific researcher who has published more than 60 research papers in the five years since his Ph.D. A number of these papers have solved outstanding conjectures and led to much further work by other mathematicians. His accolades include a Sloan Foundation Fellowship (2009-2013) as well as plenary lectures at the annual international conference in algebraic combinatorics (Nagoya, 2012) and the annual meeting of the Australian Mathematical Society (Brisbane, 2010).

Recent and Significant Publications:
"Inverse problems in cylindrical electrical networks," with P. Pylyavskyy, *SIAM Journal of Applied Mathematics*, 72, 2012, pp. 767-788.
"Total positivity in loop groups I: Whirls and curls," with P. Pylyavskyy, *Advances in Mathematics*, 230, 2012, pp. 1222-1271.
"Quantum cohomology of G/P and homology of affine Grassmannian," with M. Shimozono, *Acta Mathematica*, 204, 2010, pp. 49-90.
"Schubert polynomials for the affine Grassmannian," *Journal of the American Mathematical Society*, 21, 2008, pp. 259-281.

<u>Service</u> – Professor Lam has served on important departmental committees and co-organized a weekly seminar. Beyond the university he has served on program committees for conferences, National Science Foundation review panels, and as a referee for journals and grant proposals. Professor Lam is editor-in-chief of the *Journal of Algebraic Combinatorics*.

<u>External Reviewers</u>:
Reviewer (A)
"...Lam is a world class mathematician. In addition to all the ground breaking work he did early in his career, I am very impressed with the work he has done since arriving in Michigan. ... Frankly, I was astounded by how many papers he has added to his CV since 2009... I give you my highest recommendation for Thomas Lam to be promoted to full professor at the University of Michigan."

Reviewer (B)
"Thomas Lam is the premier world leader at his career stage in the combinatorics of symmetric functions, and in the top class of researchers in algebraic combinatorics more generally, particularly connections to representation theory and algebraic geometry. ... You will see from (if nothing else) Lam's list of invited talks that it is not possible for anyone to be more visible at an international level than he is."

Reviewer (C)
"Thomas Lam is now an established leader in algebraic combinatorics. He has contributed work to most active subfields... He writes at a blistering speed and has a huge output. He is consistent, productive, established, powerful and effective in his research. ...yes, absolutely, Thomas Lam's work has impact. He is internationally visible and popular."

Reviewer (D)
"One of his single most famous solo works was his JAMS paper 'Schubert polynomials for the affine Grassmannian'. ... This was a very important and seminal paper, inspiring a huge amount of further work in affine Schubert calculus, both by Lam and many others. ... I think Lam is fantastic. ...his reputation worldwide is as one of the leaders of algebraic combinatorics."

Reviewer (E)
"I think this is enough to demonstrate his amazing creativity, his remarkable ability to uncover fruitful and unexpected connections between seemingly unrelated fields, and the impressive power of his combinatorial skills. ... I am totally convinced that LAM fully deserves a position of professor with tenure at the University of Michigan, and I recommend him whole-heartedly."

Reviewer (F)
"In conclusion, even though Thomas is a combinatorist and only a small portion of his papers is focused on geometry, his work has had a great impact on this important subject. ...judging on the influence of his work in geometry, I am certain that he is an outstanding mathematician."

Reviewer (G)
"I regard Thomas Lam as an outstanding mathematician, with many stellar results, an international reputation, and an exciting research program! He definitely deserves a promotion to...professor..."
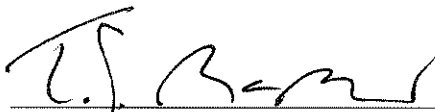
Reviewer (H)
"Lam's research program is mature, broad and deep… Thomas' work has visibility on an international scale. … He has collaborators based in the United Kingdom, France, Hong Kong, and Japan. When Thomas gets involved in an area of mathematics, his work is almost invariably an important contribution and often foundational. I think he has the potential to be important to the profession at large."

Reviewer (I)
"I regard Lam as already a world leader in algebraic combinatorics, with tremendous potential for further development. He is also a clear lecturer, an excellent writer, and an effective collaborator. … He is thoroughly deserving of promotion to Professor and has my highest recommendation."

Summary of Recommendation:
Professor Lam is a prolific researcher who has earned a leading status in algebraic combinatorics. His teaching record attests to his excellence as an instructor and he provides important service to his department and profession. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Thomas Lam be promoted to the rank of professor of mathematics, with tenure, College of Literature, Science, and the Arts.

Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History and Dean
College of Literature, Science, and the Arts

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