

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

Volker W. Elling, assistant professor of mathematics, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of mathematics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

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| Ph.D. | 2005 | Stanford University |
| Diplom | 2000 | Rheinisch-Westfälische Technische Hochschule Aachen (RWTH Aachen University) |
| M.S. | 1998 | Georgia Institute of Technology |

Professional Record:

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| 2007 – present | Assistant Professor, Department of Mathematics, University of Michigan |
| 2005 – 2007 | Prager Assistant Professor (post-doctoral position), Division of Applied Mathematics, Brown University |
| 2005 | Post-doctoral Researcher, Stanford University |

Summary of Evaluation:

Teaching – Professor Elling contributes to the Mathematics Department’s teaching at all levels, from lower-division undergraduate courses to advanced graduate courses, mostly in applied mathematics. He has developed appropriate use of technology to improve student learning and, as a result, student evaluations are strong. He is also supervising the dissertation research of a doctoral student.

Research – Professor Elling has established himself as one of the top researchers of his generation in the field of fluid dynamics. His work is deep and strikingly original in an area that has been central to mathematics since the time of Newton, and it has remained timely throughout that period. He combines effective schemes for accurate numerical solution of large-scale differential equations, careful theoretical analysis of the behavior and stability of the solutions, and clear presentations of the physical applications of his mathematical work. Professor Elling recently received a National Science Foundation CAREER award (2011-2016) and a Sloan Research Fellowship (2011-2013).

Recent and Significant Publications:

“Regular reflection in self-similar potential flow and the sonic criterion,” *Communications in Mathematical Analysis*, 8(2), 2010, pp. 22–69.

“The carbuncle phenomenon is incurable,” *Acta Mathematica Scientia, Series B*, 29(6), 2009, pp. 1647–1656.

“Counterexamples to the sonic criterion,” *Archive for Rational Mechanics and Analysis*, 195(3), 2009, pp. 987–1010.

“Supersonic flow onto a solid wedge,” with T.-P. Liu, *Communications in Pure and Applied Mathematics*, 61(10), 2008, pp. 1347–1448.

Service – Professor Elling has contributed more to the administrative work of the Mathematics Department than is ordinarily expected of junior faculty. He served for a year on the department’s Executive Committee, and he is now in his third year of service on the Graduate Admissions and Fellowships and the Undergraduate Counseling committees.

External Reviews:

Reviewer (A)

“I anticipate this [promotion to tenure] will be a very easy decision, since I could hardly imagine a more worthy candidate. ...Elling has made fundamental progress on long-standing open problems. ...I regard Elling’s contributions in this area as the most important advances which occurred in recent years. I have the highest esteem for his work, and I believe he has great potential for further breakthroughs in future years.”

Reviewer (B)

“...Volker is a very talented mathematician [of his generation] who has taken on some immensely challenging mathematical problems and has succeeded in finding some real gems. ...I am very impressed by his mathematical vision and his grasp of the mathematical, numerical and physical details for vortex sheet problems. I do believe that he is ready for promotion and tenure at this time...”

Reviewer (C)

“...Dr. Elling’s work is of high caliber: outstanding, original, and significant. His research program has been very ambitious and challenging, and extremely important in applications. ... I have no doubt that he will make more important contributions in the near future. In view of his impressive research body of work, I think that it is the right time for you to promote Dr. Elling to the rank of Associate Professor.”

Reviewer (D)

“...in my opinion, Elling is eminently qualified for the promotion. ... All of his papers are significant and deep. Elling is a gifted lecturer, one of the best I have encountered, in any [generation].”

Reviewer (E)

“...Volker is definitely one of the very top researchers [of his generation] in the field of hyperbolic systems of conservation laws. ... His research projects are quite ambitious and display an unusual maturity and depth for somebody who got his PhD in 2005. Volker is working on the most important problems in his field, in spite of the fact that they pose tremendous difficulties.”

Reviewer (F)

“Volker Elling worked on difficult problems and has made important contributions... I strongly support his promotion to the rank of Associate Professor with tenure...”

Reviewer (G)

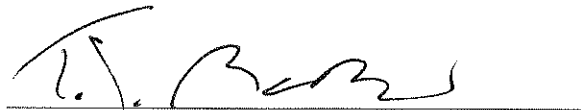
“Volker’s work has already received good recognition, and I expect it to do even better in the future. ... In view of Volker’s intellectual progress, his very substantial funding and his solid reputation...I believe he would be a natural candidate for tenure at my university...”

Reviewer (H)

“Volker is one of the most original researchers [of his generation] in analysis and applied mathematics. His works [sic] on the shock wave theory is the best in the past decade. His recent work on vortex spirals shows that he is able to branch into another core subject and resolve a basic problem. ... Volker is good at computation, a deep analyst, original and independent. He has the potential to develop into a major figure in applied mathematics.”

Summary of Recommendation:

Professor Elling is a leading researcher in fluid dynamics. He contributes effectively to the department’s teaching mission in applied mathematics and to its administrative work. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Volker W. Elling be promoted to the rank of associate professor of mathematics, with tenure, in the 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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