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

Martin J. Strauss, assistant professor of mathematics, College of Literature, Science, and the Arts, and assistant professor of electrical engineering and computer science, College of Engineering is recommended for promotion to associate professor of mathematics, with tenure, College of Literature, Science, and the Arts, and associate professor of electrical engineering and computer science, without tenure, College of Engineering.

Academic Degrees:

Ph.D.	1995	Rutgers University
A.B.	1989	Columbia University

Professional Record:

2006 – 2007	Visiting Associate Research Scholar, Program in Applied and Computational Mathematics, Princeton University
2004 – present	Assistant Professor, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of Michigan
1997 – 2004	Principal Investigator, AT&T Laboratories-Research
1996 – 1997	Consultant, Network Services Research Center, AT&T Laboratories
1995 – 1996	Postdoctoral Research Associate, Department of Computer Science, Iowa State University

Summary of Evaluation:

Teaching – Because Professor Strauss has a joint appointment, his teaching is split between the Department of Mathematics and the Department of Electrical Engineering and Computer Science. He is strongly committed to becoming an excellent teacher. He is the primary advisor for two doctoral students in each department and secondary advisor for one doctoral student in each department. He is also a founding member of a committee to develop an interdisciplinary undergraduate degree program in informatics.

Research – Professor Strauss is an applied mathematician whose field of expertise is the development and analysis of algorithms, particularly approximation algorithms and randomized algorithms. His work is characterized by a combination of theory and application. He is the author or co-author of over 50 refereed publications appearing in highly respected journals and in the proceedings of prestigious conferences. His research work is viewed as outstanding and has had major impact. He has been issued several patents and has generated substantial grant support in his brief time in academia.

Recent and Significant Publications:

"Group testing in statistical signal recovery," with A. C. Gilbert, *Technometrics*, forthcoming.

"Secure multiparty computation of approximations," with J. Feigenbaum, et al., *Transactions on Algorithms*, 2006, pp. 435–472.

"Maintaining time-decaying stream aggregates," with E. Cohen, *Journal of Algorithms*, 59(1), 2006, pp. 19–36.

"Better alternatives to OSPF routing," with J. Fong, et al., Special issue of *Algorithmica* on network design, 43(1–2), 2005, pp. 113–131.

Service – Professor Strauss has made a good contribution to the service needs of both departments. In mathematics he has served several years on the Graduate Committee and the Preliminary Examination Committee of the Applied and Interdisciplinary Mathematics Program. In engineering he served on the Graduate Committee and is currently on the Curriculum Committee. He also serves on the editorial board of the journal, *Theory of Computing Systems*.

External Reviews:

Reviewer (A)

"Professor Strauss is highly recognized for his exceptional publications in the field of randomized approximation algorithms for massive and high speed data streams. Furthermore, he has done (and continues to do) research in cryptography, data security and complexity theory. ... His articles have been extensively cited in the field of Algorithms and Databases and are examples of elegance and brilliance."

Reviewer (B)

"Martin is held in very high regard in the theory of computation community for his leadership in the study of algorithms for massive data sets, and especially for his work on data streaming and compressed sensing. Martin has contributed several deep and fundamental insights to this study which have led to further breakthrough results."

Reviewer (C)

"Martin has refereed publications in the most prestigious and selective conferences and journals. ... In the database field, good conference publications are often considered equivalent to journal publications. ... Not only the quantity is high, but the quality of his work is excellent. ...Martin has the enviable gift of bridging mathematics with databases and, in general, with computer science applications."

Reviewer (D)

"Prof. Strauss is one of the world leaders in *data streaming algorithms*, where the main challenge is to summarize enormous amounts of data using relatively small space and in linear time. Data streaming algorithms are of significant interest in many current applications, where the overwhelming amounts of data cause classical algorithmic approaches to collapse."

Reviewer (E)

"His research field is broad. It consists of three important areas of modern mathematics and computer science... In each of these areas, Dr. Strauss has achieved a significant success."

Reviewer (F)

"The revolution that is happening right now, and in which Dr. Strauss has played and continues to play an essential and central role, shows us how wrong we all were. It required Dr. Strauss' vision and tenacity to bring about this profound change, and it will continue to require him, and his collaborators and students, to make sure a sufficiently large group of scientists...understand the real impact of this new vision..."

Reviewer (G)
"I have a very high opinion of Martin. He works on difficult and important problems in data/signal/image processing and has obtained innovative and deep results."

Reviewer (H)
"Martin is one of the most productive and accomplished applied mathematician/theoretical computer scientist [of his generation] that I know. There is no doubt that he amply deserves to receive tenure... *The aforementioned two publications are among the most important papers I have ever read, period.* Everybody in the applied harmonic analysis community knows about these works."

Reviewer (I)
"Clearly, Martin continues to be highly active at the forefront of a rapidly developing new area in signal processing, namely that of compressed sensing; he is also very careful, clear-minded and mathematically rigorous in his work, which are valuable assets in the area of signal processing."

Summary of Recommendation:
Professor Strauss is a path breaking researcher who is also a good teacher and an active citizen. The Executive Committees of the College of Literature, Science, and the Arts, and the College of Engineering and we recommend that assistant professor Martin J. Strauss be promoted to the rank of associate professor of mathematics, with tenure, in the College of Literature, Science, and the Arts, and associate professor of electrical engineering and computer science, without tenure, in the College of Engineering.

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

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

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