

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

Robert D. Deegan, assistant professor of physics, and assistant professor of complex systems, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of physics, with tenure, and associate professor of complex systems, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	1998	University of Chicago
M.S.	1996	University of Chicago
B.S.	1991	University of Massachusetts – Amherst

Professional Record:

2007 – present	Assistant Professor, Department of Physics and the Center for the Study of Complex Systems, University of Michigan
2004 – 2007	Lecturer, Department of Mathematics, University of Bristol
2001 – 2004	Research Associate, Department of Physics, University of Texas
1998 – 2001	Post-doctoral Fellow, Department of Physics, University of Texas

Summary of Evaluation:

Teaching – Professor Deegan has taught across the full range of our undergraduate and graduate curriculum. Soon after his arrival at Michigan he also began developing a new upper-level laboratory course in nonlinear dynamics that was cross-listed with the Center for the Study of Complex Systems. This effort involved designing, constructing, and documenting a collection of laboratory experiments with which students perform qualitative and quantitative investigations of fundamental phenomena in experimental nonlinear science. Professor Deegan also works closely with undergraduate and graduate students performing senior thesis and doctoral dissertation research in his laboratory.

Research – Professor Deegan’s research may be categorized under several labels including soft condensed matter physics, fluid dynamics, and experimental nonlinear science. He is the author or co-author of 20 refereed scientific publications on a range of observational and theoretical research on the structure of splashes and the vibration-induced motion of droplets, among other topics. All of these papers have appeared in first-rank journals. All but three of these papers are co-authored, which is standard for the type of research he performs. Professor Deegan’s research has been and is supported with significant external funding that he obtained from the National Science Foundation, the Defense Advanced Research Projects Agency (DARPA), the James S. McDonnell Foundation, and the Department of Energy.

Recent and Significant Publications:

“Localized structures in vibrated emulsions,” with C. Falcon, et al., *Europhysics Letters*, 98, 2012, doi:10.1209/0295-5075/98/24002.  
“Finessing the fracture energy barrier in ballistic seed dispersal,” *Proceeding of the National Academy of Science*, 20, 2012, 1056.

“Evolution of the ejecta sheet from the impact of a drop with a deep pool,” with L. V. Zhang, et al., *Journal of Fluid Mechanics*, 690(5), 2012.

“Wavelength selection in the crown splash,” L. V. Zhang, et al., *Physics of Fluids*, 22, 2010, 122105.

Service – Professor Deegan has performed service duties typical of those expected from tenure-track faculty at Michigan. He has served on a number of committees and helped organize several seminars and a symposium. He also served as a concentration counselor and ran the graduate student mini-colloquium several times. Professor Deegan has acted as a referee for about ten different journals and served on a National Science Foundation proposal review panel.

External Reviewers:

Reviewer (A)

“As is evident from his publication list, Professor Deegan published extensively in major and prestigious relevant journals, including *Physical Review*, *Physical Review Letters*, the *Journal of Fluid Mechanics*, and others. His work was well received by the scientific community, as is apparent from the many citations that his papers received as well as from the numerous talks that he has given.”

Reviewer (B)

“He clearly has been highly productive...with publications in some of the strongest journals for his subject. ... The large number of invited talks that he has given speaks to his high level of recognition in the Soft Matter community.”

Reviewer (C)

“The candidate works in the field of complex systems with special emphasis on non-equilibrium processes and self-organization. ... In that field he has begun to carve out his niche. With his beautiful recent work he has shown that he is on his way to become one of the main players in the field.”

Reviewer (D)

“...Rob has done well during his time thus far at Michigan: he has begun new areas of research that are interesting (ie, his seed work), and he has made fundamental contributions to fields that he had worked in before coming to Michigan (ie, splashing). He had an outstanding reputation in the research community...due to his seminal work on the coffee drop problem...”

Reviewer (E)

“His study of vibrationally-induced drop motion up a slope (Brunet *et al.* 2007) was a classic, and informed my group’s subsequent study of the feeding mechanism of the Phalarope, which was published in *Science*. ... I believe that Robert’s style of research is ideally suited to getting undergraduate and graduate students excited about research science.”

Reviewer (F)

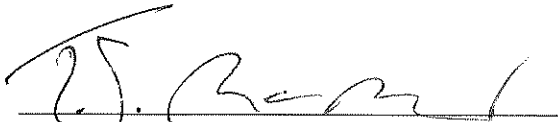
“Robert seems to have excellent physical intuition, building realistic models of physical phenomena on his own as evidenced by single author papers in *Physical Review E* and in *PNAS*. The latter is especially nice as it shows his flexibility in considering interdisciplinary problems.”

Reviewer (G)

“While Robert's recent PNAS paper (a gem) on the mechanism of how seed pods eject their seeds over large distances indicates a continued interest in fracture, much of his more recent work has been focused on hydrodynamic instabilities in both pure and complex fluids. ...Deegan is an excellent researcher who has made a number of very significant contributions to the field of driven nonlinear systems. His research is characterized by both excellent scientific taste in questions to pursue and an impressive ability for innovation in how to pursue them.”

Summary of Recommendation:

Professor Deegan has demonstrated quality, productivity and leadership in creating and disseminating knowledge in physics. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Robert D. Deegan be promoted to the rank of associate professor of physics, with tenure, and associate professor of complex systems, 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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