

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

Lu Li, associate professor of physics, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of physics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2008	Princeton University
B.S.	2002	University of Science and Technology of China

Professional Record:

2016 – present	Associate Professor, Department of Physics, University of Michigan
2011 – 2016	Assistant Professor, Department of Physics, University of Michigan
2008 – 2011	Pappalardo Fellow in Physics, Massachusetts Institute of Technology

Summary of Evaluation:

Teaching – Professor Li is a dedicated teacher who has taught a broad range of lecture and laboratory classes. He has pushed himself to be an excellent teacher through self-assessment of his teaching and his work with the Center for Research on Learning and Teaching every term. He has a clear mission to provide the best learning experience for his students and he knows they master new physics concepts through active problem-solving. He wants them to be critical thinkers and team players, and he encourages them to work in groups. Students believe he truly cares about them and their education. Professor Li is also an excellent mentor for the undergraduate and graduate students and the post-doctoral scientists who work in his laboratory. He has created an environment where students blossom and quickly become involved in research projects. He has mentored more than twenty undergraduate students from five different departments, finding projects for each student at the appropriate level of complexity. Many of his undergraduate students have become co-authors on many of Professor Li's publications.

Research – Professor Li is an experimental condensed matter physicist, who is recognized as a leading researcher studying quantum-correlated materials. He employs novel measurement techniques, including a highly sensitive torque magnetometry technique that he invented, to study some of the most interesting materials at extremely low temperatures and high magnetic fields. His research is considered to be of the highest quality in a highly competitive and rapidly evolving field. Professor Li's recent seminal papers on correlated topological insulators and topological superconductivity are currently shaping the forefront of research in condensed matter physics. The external letter writers consistently praise the importance of his research and his leadership role in his field. They place him among the best of his generation of experimentalists.

Recent and Significant Publications:

“Quantum oscillations of electrical resistivity in an insulator,” with Z. Xiang^δ, et al, *Science*, 65, 2018, p. 362.

“Torque differential magnetometry using the qPlus mode of a quartz tuning fork,” with L. Chen, et al, *Physical Review Applied*, 9, 2018. p. 024005.

“Bulk rotational symmetry breaking in Kondo insulator SmB₆,” with Z. Xiang^δ, *Physical Review X*, 7, 2017, p. 031054.

“Rotational symmetry breaking in a trigonal superconductor Nb-doped Bi₂Se₃,” with T. Asaba, et al, *Physical Review X*, 7, 2017, p. 011009.

Service – Professor Li takes his service obligations very seriously and carries them out with great success. He has served on important committees that are vital for the well-being of the department and the college including his departmental executive committee and graduate admissions. In addition, he has participated in significant external service activities. Professor Li was elected to serve on the User Committee of the National High Magnetic Field Facility. He has served as a reviewer for many high visibility journals and he reviews proposals for funding agencies. He was a co-organizer for an international conference on “Correlated Topological Insulators: SmB₆ and Beyond” in 2015 and a National Science Foundation workshop on “Exploring Quantum Phenomena and Quantum Matter in Ultrahigh Magnetic Fields” in 2017.

External Reviews:

Reviewer (A)

“Hallmarks of Professor Li’s research are his remarkable experimental skill, his high standards in designing experiments and in analyzing the data, and the clarity and balance with which he presents his results. ...Dr. Li has already accomplished a great deal, and his work has had significant impact in a field that is very fast paced. His trajectory is very positive, and he continues to develop as an experimentalist and as a scientist... ..it seems very likely that he will increasingly be defining the frontier of the most important problems.”

Reviewer (B)

“...I have become increasingly impressed by Lu Li’s deep insights into condensed matter physics. I appreciate his keen intuition as to which experiments would be the most important to perform, as well as his demonstrated ability to complete successful experiments based on that intuition. Due to this remarkable set of talents, Prof. Lu Li’s career continues to be characterized by a steady stream of experiments that are equally remarkable for their exquisite design and sensitivity as for the importance of their findings. These findings have contributed substantially to at least four of the most active and competitive areas of research on electron correlations in condensed matter physics...”

Reviewer (C)

“Lu Li has tremendous energy, and his research is continuing to develop into new areas (such as his most recent work growing epitaxial films of topological Tellurium based chalcogenides). There are very few experimentalists at his level with such an impressive portfolio of original and highly cited papers. His proposed promotion to Full Professor is very well-deserved...”

Reviewer (D)

“...Lu is a very talented experimentalist who is leading the way at the intersection of correlated electrons and topological system. In recent years there has been tremendous excitement and interest in topological phases. Instead of being a follower...he has been an active leader in the search for quantum correlated topological materials, a class of correlated electronic systems with emergent topological properties.”

Reviewer (E)

“Professor Li is certainly among the more visible condensed matter experimentalists of his [generation]. In fact, he often appears in comparison lists associated with appointments and promotions of his peers. This in general has been a very competitive group of...scholars, who are now leading various directions of experimental condensed matter physics.”

Reviewer (F)

“Lu Li is extremely bright, extremely daring, and driven by excitement to make a significant and original contribution to our understanding of quantum materials. He is clearly a brilliant experimentalist, with the technical abilities to carry through challenging experiments and, where necessary, to develop new experimental methodologies.”

Reviewer (G)

“Since his tenure, Lu has continued to excel as a condensed matter experimentalist. He continued to play a leading role in un-raveling the mystery surrounding quantum oscillations... He has also broadened his scope to include other topological materials and superconductors... He is highly visible and is invited to speak at international conferences and workshops. There is no doubt that promotion to Full professorship is well deserved...”

Summary of Recommendation:

Professor Li has shown the highest intellectual 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 Associate Professor Lu Li be promoted to the rank of professor of physics, with tenure, College of Literature, Science, and the Arts.



Elizabeth R. Cole, Interim Dean
Professor of Women’s Studies, Psychology,
and Afroamerican and African Studies
College of Literature, Science, and the Arts

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