

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS

Approved by the
Regents
May 21, 2015

Aaron T. Pierce, 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.	2002	University of California, Berkeley
M.A.	1999	University of California, Berkeley
M.S.	1998	Trinity College, Cambridge University
B.A.	1998	Rice University

Professional Record:

2013 – present	Director, Michigan Center for Theoretical Physics (MCTP), University of Michigan
2011 – present	Associate Professor, Department of Physics, University of Michigan
2006 – 2011	Assistant Professor, Department of Physics, University of Michigan
2005 – 2006	Research Associate, Physics Department, Harvard University
2002 – 2005	Research Associate, Stanford Linear Accelerator Center

Summary of Evaluation:

Teaching – Professor Pierce is an enthusiastic teacher at all levels, from “Physics for Our Future” for freshman undergraduates to Advanced Quantum Mechanics for graduate students. He is a popular teacher with a gift for simple explanation of complex topics, and is in constant demand for outreach engagements. He is currently working on the Provost Task Teams on Engaged Learning and Digital Learning, and the REBUILD committee.

Research – Professor Pierce, a theoretical particle physicist, is a world-class expert on the Standard Model that explains the physics that we know, and on the deep open questions that go beyond it. He is renowned for his work on the interface of experiment and theory in particle physics, showing how particle colliders, dark matter detectors, and astrophysical data may reveal signals of new physics, and how such signals are to be interpreted in light of existing data. Reviewers place Professor Pierce among the best in his generation of theorists leading this search for new knowledge in the fundamental structure of matter.

Recent and Significant Publications:

“Wino dark matter under siege,” with T. Cohen, et al., *Journal of Cosmology and Astroparticle Physics*, 1310, 2013, p. 061.

“Vector-like fermions and Higgs couplings,” with J. Kearney and N. Weiner, *Physical Review*, D86, 2012, p. 113005.

“Electroweak baryogenesis and Higgs signatures,” with T. Cohen and D. E. Morrissey, *Physical Review*, D86, 2012, p. 013009.

“Single-doublet dark matter,” with T. Cohen and J. Kearney, *Physical Review*, D85, 2012, p. 075003.

Service – Professor Pierce is the director of the Michigan Center for Theoretical Physics, which offers numerous workshops and meetings of international prominence and importance. He also served on the Department of Physics Executive Committee from 2011 to 2013. He has had a personal role in organizing four workshops since 2011, and is sought after as an expert for the organization of other international meetings in particle physics.

External Reviewers:

Reviewer (A)

“I think that in the field of dark matter physics he would likely be considered one of the handful of the top experts in the World, and he is clearly considered a leader in the bigger field of particle phenomenology. His research record is superb: he has published over 50 papers with an average citation count of 55, and an h-number of 28. Equally importantly, he has been the advisor of a couple of outstanding students...”

Reviewer (B)

“Aaron is an expert in the study of dark matter and the connections between theories that have new particles that could be dark matter and the experiments that search for evidence of such dark matter particles. ...[he] has done seminal work on the study of little Higgs models. ...he is a clear leader in the field of particle physics.”

Reviewer (C)

“Aaron is among the best model builders and phenomenologists in the world. ... I am confident that in the upcoming LHC13 era he will continue to be one of the leaders of high energy theory.”

Reviewer (D)

“Aaron is a physicist of great breadth. He remains very productive, producing significant work on issues related to the dark matter in the universe and the possibility of new physics discoveries at the Large Hadron Collider (LHC).”

Reviewer (E)

“I consider Aaron Pierce one of the most brilliant theoretical physicists of his generation. He combines impressive technical skills with a creative imagination... His intuition for identifying interesting subjects is infallible...”

Reviewer (F)

“Aaron is considered to be one of the leaders in the field of his generation. Many aspects of his career, in addition to his research accomplishments, point to this: his leading role in MCTP, his varied collaborations that include many leading contemporaries, his broad knowledge and understanding of the field, and his clear thinking and ability to communicate.”

Reviewer (G)

“Professor Pierce has a complete grasp of how to develop new, motivated, theoretically consistent and experimentally viable theories for physics beyond the standard model giving explanations for the hierarchy problem, dark matter, and neutrino masses. His typical papers contain a novel idea embedded in fully explicit theory, and a detailed and correct investigation of

the possible phenomena, the experimental constraints, and the best approach for experimental verification. Many of his papers have had high impact.”

Reviewer (H)

“...he has been tireless in exploring the variety of approaches proposed by building very specific particle physics models and working out their consequences in detail. Papers such as #17, #19, and #24 have significantly illuminated our understanding of proposed mechanisms for explaining tentative dark matter observations, in particular, proposing direct particle physics tests of the relevant class of models.”

Summary of Recommendation:

Professor Pierce is a world class leading expert in his field. He has made strong contributions to teaching at all levels, as well as vigorous service contributions to teaching and outreach. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Aaron T. Pierce be promoted to the rank of professor of physics, with tenure, College of Literature, Science, and the Arts.



Andrew D. Martin
Dean, and Professor of Political Science
College of Literature, Science, and the Arts

May 2015