

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

Aaron Thomas Pierce, assistant professor of physics, College of Literature, Science, and the Arts, is recommended for promotion to associate 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.Sc. (equiv)	1998	Trinity College, Cambridge University
B.A.	1998	Rice University

Professional Record:

2006 – present	Assistant Professor, Department of Physics, University of Michigan
2005 – 2006	Research Associate, Department of Physics, Harvard University
2002 – 2005	Research Associate, Stanford Linear Accelerator Center

Summary of Evaluation:

Teaching – Professor Pierce is an effective teacher whose natural talents are well appreciated by his students. He maintains rigorous, high standards while creating an open and inviting classroom atmosphere where curiosity is encouraged. He has been very effective in teaching a range of levels, including the of quantum mechanics course for our concentrators, the terminal class of our introductory series, and at the graduate level. Student evaluations are strong, and comments often cite his enthusiasm, deep knowledge of the subject, and willingness to answer questions. Professor Pierce has also excelled at the graduate level, having chaired one doctoral degree with a second nearing completion, and having served on eight additional doctoral committees.

Research – Professor Pierce is a theorist working in the areas of elementary particles and cosmology. He is unusually broad in his research and works in two main fields: physics beyond the standard model and dark matter. He is considered to be a world expert in both theoretical analysis and data interpretation. Professor Pierce has published 44 papers in total, 22 since coming to Michigan. His research is very highly cited and widely acknowledged to be among the best in the world in these fields.

Recent and Significant Publications:

“Momentum dependent dark matter scattering,” with S. Chang and N. Weiner, *Journal of Cosmology and Astroparticle Physics*, 1001, 006, 2010, arXiv:0908.3192 [hep-ph].  
“Top quark forward-backward asymmetry from new t-channel physics,” with S. Jung, et al., *Journal of the American Physical Society D*, 81, 015004, 2010, arXiv:0907.4112 [hep-ph].  
“Is the PAMELA positron excess winos?” with P. Grajek, et al., *Journal of the American Physical Society D*, 79, 043506, 2009, arXiv:0812.4555 [hep-ph].

“Changes in dark matter properties after freeze-out,” with T. Cohen and D. E. Morrissey, *Journal of the American Physical Society D*, 78, 111701, 2008, Rapid Communication, arXiv:0808.3994 [hep-ph].

Service – Professor Pierce has demonstrated a commitment to service at all levels. Within the Department of Physics, he has taken on a variety of time-intensive assignments, including committees for the High Energy Physics Seminar, graduate admissions, the graduate qualifying exam, and for undergraduate awards. At the university level, Professor Pierce has organized eight workshops at the Michigan Center for Theoretical Physics, served on its Executive Board, and served on four College panels advising postdoctoral scholars in the pursuit of faculty jobs and new faculty in the pursuit of National Science Foundation CAREER awards. At the international level, he co-proposed and co-organized a number of workshops and conferences.

#### External Reviews:

##### Reviewer (A)

“He has established himself as one of a handful of top talents [of his generation] in the world working in the general area of physics beyond the standard model. He has a wonderful range of talents – from a deep understanding of effective field theory, to model-building ingenuity, as well as an amazing talent for absorbing and playing with data.”

##### Reviewer (B)

“Dr. Pierce is a broad expert in the phenomenology of Beyond the Standard Model physics, with a special focus on LHC [Large Hadron Collider] physics and on Dark Matter. In my own research work I have come across several of his papers, which I found relevant and well written.”

##### Reviewer (C)

“I consider Aaron Pierce one of the most brilliant theoretical physicists of his generation. He is technically very strong and his calculations are very careful and reliable: but he is also very creative and able to find new ideas. His intuition for studying interesting subjects is infallible and I believe that he can be a superb guide for students and...researchers.”

##### Reviewer (D)

“...Pierce is an internationally recognized particle theorist who will play an important role in the development of new theories of physics beyond the Standard Model and their implications both for the LHC experimental program and for searches for dark matter.”

##### Reviewer (E)

“Aaron is an exceptional physicist; he possesses both extraordinary creative talents in theoretical model building and powerful tools for comparing predictions with data.”

##### Reviewer (F)

“Aaron’s research interests cover a broad range of topics...He is quite visible in the community, serving as a convener or an organizer in many high profile meetings. ...Pierce is a well-established theorist. ... I am convinced that he will continue to make a significant mark in the field of theoretical particle physics in the years to come. I strongly support this promotion.”

Reviewer (G)

"...Aaron is an accomplished and mature physicist... I believe that Aaron is a first-rate researcher, and fully deserving of the rank of associate professor. He is very active and having significant impact in a very competitive field. I strongly urge that you grant this promotion."

Reviewer (H)

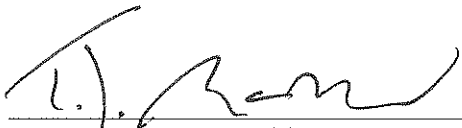
"As a postdoc at SLAC, Pierce broadened further, writing some famous papers proposing experimental tests of Little Higgs models at the Large Hadron Collider. At the same time, he started to become an expert on the theory and phenomenology of dark matter. This led to a single-author paper exploring the properties of dark matter candidates in 'split' supersymmetry models. ...this paper...caused quite a buzz... Not only was the [Aspen] program very strong and well attended by experts in the field, but also it was quite evident that Pierce and Weiner are considered leaders by the larger community."

Reviewer (I)

"...he became a mature scientist who has a good nose to spot where the gold mine is and can form his own research program independently. I'd better not look at him as my junior collaborator anymore; he is now rather *my competition!*"

Summary of Recommendation:

Professor Pierce has shown high intellectual quality, productivity, and leadership in creating and disseminating knowledge in physics. Through his outstanding research he has gained a reputation as a world leader in theoretical particle physics. He is also an excellent teacher and talented communicator. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Aaron Thomas Pierce be promoted to the rank of associate professor of physics, 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

May 2011