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

Thomas A. Schwarz, 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. 2006 University of Michigan
- M.S. 2002 University of Michigan
- M.S.E. 2001 University of Michigan
- B.S.E. 1999 University of Michigan

Professional Record:
- 2019–present Associate Professor, Department of Physics, University of Michigan
- 2012–2019 Assistant Professor, Department of Physics, University of Michigan
- 2011–2012 Associate Scientist, Fermi National Laboratory
- 2006–2011 Post-doctoral Associate in Physics, University of California, Davis

Summary of Evaluation:
Teaching: Professor Schwarz demonstrates his commitment to creating inclusive, interactive, and comfortable learning environments by incorporating various teaching techniques, encouraging personal meetings, and utilizing teaching research resources such as CRLT. As a way of fostering inclusivity and connecting with students, he shares personal experiences and emphasizes that learning is a shared journey. Professor Schwarz’s design and teaching of a studio format for Physics 240 has received many extremely positive reviews from students and colleagues. As the Department of Physics’ first Undergraduate Research Coordinator, Professor Schwarz has played a critical role in creating research opportunities for dozens of students across the many research groups in the department. He has demonstrated exceptional mentorship skills with postdocs, graduate students, and undergraduates, guiding them toward developing their research identities, and encouraging them to take leadership roles.

Research: Professor Schwarz has led impactful research in elementary particle physics. He and collaborators measured Higgs boson production in association with the production of top quarks, which is a critical measurement to test the role the Higgs boson plays in giving mass to the most massive elementary particle, the top quark. He and collaborators have also measured for the first time how the Higgs boson decays to muons, which is critical to understanding the role of the Higgs boson in giving mass to the much lighter leptons. Professor Schwarz has also performed incisive searches for possible new Higgs bosons that are motivated by conjectured resolutions to several outstanding questions that continue to puzzle researchers about the nature of mass generation. In addition to these analysis breakthroughs, Professor Schwarz has played a key role in the delicate and technical upgrades of the ATLAS experiment, which is required to penetrate deeper into the nature of elementary particles.
Recent and Significant Publications:
The ATLAS collaboration, Aad, G., Abbott, B., et al. (2023). Search for resonant and non-
resonant Higgs boson pair production in the $b\bar{b}\tau\tau$ decay channel using 13 TeV $pp$
collision data from the ATLAS detector. *Journal of High Energy Physics, 40*: arXiv:
1808.00336.
the Standard Model Higgs boson in $pp$ collisions at $\sqrt{s} = 13$ TeV with the ATLAS
Interactions with Top Quarks in the $ttH$ and $tH$ Processes Using $H \rightarrow \gamma\gamma$ with the ATLAS
production in association with a top quark pair with the LHC at the ATLAS detector.

Service: Professor Schwarz’s service work and leadership roles demonstrate a deep commitment
to his students, his department, his field, and the broader community, going beyond standard
expectations for an associate professor. Within the university, his service has had a significant
focus on undergraduate education and opportunities, notably as the first Undergraduate Research
Coordinator for the department, through which he has placed dozens of undergraduates in
academic and industry internships, and as the associate chair for undergraduate education.
During the pandemic, he served on the UM President and Provost Advisory Council for COVID-
19; outside the university, his COVID-19 research and collaborations with the CDC and the State
of Michigan reflected his dedication to service to society at large. He has moreover
demonstrated significant leadership in his service roles within the ATLAS Collaboration.

External Reviewers:
Reviewer (A): “He has a great sense of what physics topics are interesting and promising in
collider physics…”
Reviewer (B): “…[Professor Schwarz] does not shy away from complexity and the results are of
very high quality…”
Reviewer (C): “The Schwarz group impact on the top [quark] measurement is clear as one of his
graduate students was the contact editor for the internal paper. This is a clear indication of his
group’s leading role…”
Reviewer (D): “…[Professor Schwarz’s] L2 leadership role is especially noteworthy as only the
most talented and trusted persons are named to those positions, which require not only top-notch
technical skills, but also top-notch management, teambuilding, and leadership skills…”
Reviewer (E): “…Professor Schwarz and his research group have made exceptional
contributions to the data analysis, in particular in the investigation of the Higgs boson… I would
also like to stress right away that it is rather unique for someone at the Associate Professor level
to achieve such high visibility in both the data analysis and in the hardware areas…”
Reviewer (F): “While all publications are authored jointly by all members of the collaborations (as per the rules), there is intense competition within these experiments for producing the best results and for passing the rigorous internal reviews before publication. Prof. Schwarz has consistently been one of the top researchers in ATLAS, initiating new analyses and bringing innovative techniques to bear on the tough problems….”

Summary of Recommendation:
Professor Schwarz 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 Thomas A. Schwarz be promoted to the rank of professor of physics, with tenure, College of Literature, Science, and the Arts.

Anne Curzan, Dean
Geneva Smitherman Collegiate Professor of English Language and Literature, Linguistics, and Education
Arthur F. Thurnau Professor
College of Literature, Science, and the Arts

May 2024