Approved by the Regents
May 19, 2016

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

Junjie Zhu, 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.	2004	University of Maryland, College Park
B.S.	2000	University of Science and Technology of China

Professional Record:

2010 – present	Assistant Professor, Department of Physics, University of Michigan
2010	Research Scientist, Department of Physics, University of Michigan
2004 – 2010	Research Associate, State University of New York, Stony Brook

Summary of Evaluation:

Teaching – Professor Zhu's courses range from advanced undergraduate courses to high-level graduate courses. The two classes that he has taught most frequently are Physics 351 (Math Methods) and Physics 401 (Intermediate Mechanics). Both classes are challenging for students, and yet they report that they learned a lot and enjoyed Professor Zhu's instruction. Even with increasingly stronger evaluations, Professor Zhu has sought advice from experienced faculty and from CRLT on ways to improve his teaching. As a result, he is becoming an even stronger teacher over time. Professor Zhu recently graduated three Ph.D. students and is currently supervising two Ph.D. students. He has also mentored five post-doctoral fellows and ten undergraduate students in the past five years.

Research – Professor Zhu has clearly established himself as a leader in experimental high energy physics. What is exceptional about this is the degree to which he has succeeded in multiple dimensions of his research. He has proven himself to be an expert in the design and production of the high speed electronics needed for particle detection. He will certainly play a central role in the development of the next state of upgraded detectors. Professor Zhu's research achievements at the Tevatron Collider and at the Large Hadron Collider are recognized internationally as being extraordinarily important in this field. He has also been very involved with analysis of experimental data. Professor Zhu is responsible for two successful searches of the data and many of his peers have noted how clean and important these analyses are. A sign of the impact Professor Zhu had made is the large number of invited talks he has given at meetings, his outstanding funding profile, and the awards he has received.

Recent and Significant Publications:

"Characterization of a serializer ASIC for the upgrade of the ATLAS muon detector," J. Wang, et al., accepted by *IEEE Transactions on Nuclear Science*, arXiv:1509.06636.

"Evidence for electroweak production of $W^{\pm}W^{\pm}jj$ in pp collisions at $\sqrt{s}$=8 TeV with the ATLAS detector," *Physical Review Letters*, 113, 2014, p. 141803 (PRL editor's suggestion).

"Measurement of WW production in pp collisions at $\sqrt{s}$=7 TeV with the ATLAS detector," *Physical Review D*, 87, 2013, p. 112001.

"Evidence for a particle produced in association with weak bosons and decaying to a bottom-antibottom quark pair in Higgs boson searches at the Tevatron," *Physical Review Letters*, 109, 2012, p. 071804.

Service – Professor Zhu's service record at the departmental, and national and international levels is strong and diverse. He organized the HEP/Astrophysics seminars for two years, served on the Graduate Admissions Committee twice, and has been a member of the Graduate Fellowships Committee. Professor Zhu is the principle investigator of the National Science Foundation US-CERN REU program that sends fifteen outstanding undergraduate students nation-wide to CERN to conduct summer research in different fields. He organized several important international and national physics workshops on LHC physics, and he has served as a reviewer for several prestigious journals in his field.

External Reviewers:

Reviewer (A)

"At a review of the project at CERN, the experts declared that the available time was too short to design an ASIC of that complexity; it couldn't be done. The Michigan group, under Junjie's supervision, completed the project in the available time and it worked spectacularly well; the ASIC achieved all its specifications. … People have to have all the skills needed to work in our field. Junjie is exactly the kind of person we look for. If he were to be a candidate for tenure [at my institution]…I am sure he would be promoted."

Reviewer (B)

"…Junjie Zhu is a strong physicist with a balanced portfolio extending from analysis inception and leadership through detector performance understanding to detailed work on hardware development. This well-balanced mix is quite rare in the field at the current time, as many…physicists lack the interest and drive in hardware and detailed-level performance understanding, and it is to be praised highly."

Reviewer (C)

"He is a world leader in the experimental high energy physics community, with many seminal physics achievements addressing some of the most important questions of particle physics. Junjie has been a leader in the study of electroweak physics, first at the DO experiment at Fermilab and now at the ATLAS experiment at the LHC collider at CERN."

Reviewer (D)

"Junjie is one of maybe 10 [of the] most prominent physicists in the world (of all [generations], including full professors) in the field of physics studies involving the Wand Z bosons. Junjie has used his expertise, knowledge, and skill to build a remarkably diverse series of publications in this area. … Junjie is a pleasure to work with, as he is a leader, and leads by example. He works harder than everybody around him, and inspires those working with him to work hard as well."

Reviewer (E)
"He has made contributions to hardware, software and track reconstruction. This is evidence for strong and productive involvement with the improvement of the ATLAS muon detection system, and speaks well to his skills as an experimental physicist."

Reviewer (F)
"He has very impressive credentials in producing new science, in building cutting-edge instrumentation, and leading teams of physicists. I put him in the top echelon of high energy experimentalists [of his cohort]. He has a broad knowledge of the field and the techniques needed to conduct world-class measurements, and has excellent instincts for choosing important problems to work on."

Reviewer (G)
"He was awarded a DOE Early Career award in 2012. That award goes to only a handful of physicists [of his generation] annually, and it shows that Prof. Zhu is very well regarded and recognized by the US high energy physics community."

Reviewer (H)
"His accomplishments at ATLAS are remarkable and impressive. I find his analysis approach from the SM processes to Beyond the SM strategic. … Concerning his service to the profession, Junjie has been convening and leading analysis groups for the ATLAS experiment and for the field of particle physics. I have a very positive opinion on his leadership role and service work."

Reviewer (I)
"He has demonstrated significant leadership and physics analysis skills, ability to secure funding, and significant hardware responsibilities. He is an internationally recognized expert and leader in the field of electroweak physics. I therefore strongly support him for a tenure promotion at the University of Michigan."

Summary of Recommendation:
Professor Zhu 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 Assistant Professor Junjie Zhu be promoted to the rank of associate professor of physics, with tenure, College of Literature, Science, and the Arts.

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

May 2016