Approved by the Regents
May 20, 2010

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

Jon M. Miller, assistant professor of astronomy, College of Literature, Science and the Arts, is recommended for promotion to associate professor of astronomy, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

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| Ph.D. | 2002 | Massachusetts Institute of Technology |
| A.B. | 1997 | The University of Pennsylvania |

Professional Record:

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| 2005 – present | Assistant Professor, Department of Mathematics, University of Michigan |
| 2005 | NASA Chandra Postdoctoral Fellow (declined to accept tenure-track position at Michigan) |
| 2002 – 2005 | NSF Astronomy and Astrophysics Postdoctoral Fellow, Harvard-Smithsonian Center for Astrophysics |

Summary of Evaluations:

Teaching – Professor Miller is an effective and caring instructor. He has made unique contributions to the educational experience of students in his own courses and through mentoring activities. He has been very effective at involving undergraduate students in research and in recruiting graduate students to the department.

Research – Professor Miller uses X-ray emission from accretion flows near black holes to diagnose the character of the accretion flow and the structure of the black hole. He has made major contributions to our understanding of the generation of winds or jets in these flows. His application of some of the same techniques yields constraints on neutron star structure and the nuclear equation of state. He is a leader in these areas, and is responsible for most of the current estimates of black hole spins. He has made major contributions to planning for major X-ray missions by NASA.

Recent and Significant Publications:

"The fundamental plane of accretion onto Black Holes with dynamical masses," with K. Gultekin, et al., *The Astrophysical Journal*, 706, 2009, p. 404.

"Astrophysics: Capturing black hole pairs," *Nature*, 458, 2009, p. 40.

"The accretion disk wind in the Black Hole GRO J1655-40," with J. Raymond, et al., *The Astrophysical Journal*, 680, 2008, p. 1359.

"Relativistic x-ray lines from the inner accretion disks around Black Holes," *Annual Reviews of Astronomy and Astrophysics*, 45, 2007, p. 441.

Service – Professor Miller has ably served as the lead recruiter for graduate students, on the preliminary exam committee, on search committees and on the department website design committee. He has served the national X-ray astronomy community as a TAC member and a leading spokesman for current and future NASA missions.

External Reviews:

Reviewer (A)

"He is one of the best X-ray astronomers [of his generation]...and a world leader in observational studies of Galactic compact objects. ... He is an excellent scientist working in an exciting area that can expect to see significant growth over the next decade."

Reviewer (B)

"Jon is a star and a real leader. Among X-ray spectroscopists who have emerged during the last decade-plus, I would rank him at the top... There is no question that Jon would be promoted to associate professor with tenure at [my institution]."

Reviewer (C)

"I believe it is appropriate to have someone with Jon's expertise in a well-balanced astronomy department... Given his research stature and productivity, and his high level of service to the community, I believe we would certainly promote him to associate professor with tenure here in [my institution]."

Reviewer (D)

"I have high respect for the significance and quality of the research work done by Dr. Miller... Evidence of his high stature includes a very strong publication and citation record, a strong record of invited conference talks and colloquia, authorship of a major invited article in *Annual Reviews of Astronomy and Astrophysics*, the fact that one of his postdoctoral researchers won a Chandra Fellowship, and leadership in X-ray observatory science teams and user groups. Dr. Miller's greatest strength is likely his *incredible* energy and his ambition in tackling challenging research problems. When faced with a complex problem, he is able to attack its essential parts without becoming distracted by peripheral details."

Reviewer (E)

"He is exceptionally productive with an inexhaustible interest in understanding accreting black holes from an observational point of view. He writes excellent winning proposals... He assembles teams of experts in order that multi-wavelength coverage or theoretical expertise is readily available ... The results from this work have been outstanding."

Reviewer (F)

"No X-ray astronomer is more successful in winning observations or more productive in publishing papers. A number of his research initiatives and papers mark [sic] fundamental contributions. These efforts have won him considerable attention and influence in the field."

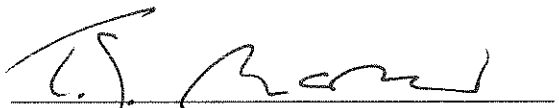
Reviewer (G)

"...Miller is a worlds [sic] expert on the study of strong gravity in and near black holes via the use of X-ray spectroscopy and timing. He has studied black holes of all masses... This field is at the cutting edge of research on the nature of space time near black holes... I thus believe that this is one of the core areas of study of astrophysics and is central to a well balanced department..."

Reviewer (H)
"…I am extremely impressed with Jon's record. He has a broad and multi-faceted research program to explore collapsed objects on several scales. He is very well-funded and has been notably successful in competing for observing resources. He has assembled a very capable team of postdoctoral researchers…and students."

Reviewer (I)
"Jon has initiated a program to trace supermassive black hole mass and spin versus cosmic time. He is using data to assess the relative importance of gas accretion and mergers in the evolution of supermassive black holes. Since black holes present the most extreme gravity in our observable universe, they provide natural laboratories to test General Relativity (GR)… Jon is very much at the forefront of this research devising innovative observational programs and interpreting the results. His work is extremely well-regarded, complements that of others at U. Michigan, and covers areas of research important to his department and to the larger astrophysics community."

Summary of Recommendation:
Assistant Professor Miller has established himself as a leader in his field. He is a very capable and conscientious teacher at all levels and has made major contributions to the recruiting of graduate students. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Jon M. Miller be promoted to the rank of associate professor of astronomy, with tenure, in the 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

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