

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

Keren Sharon, 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:

Ph.D.	2009	Tel Aviv University
M.S.	2003	Tel Aviv University
B.Sc.	2001	Tel Aviv University

Professional Record:

2013 – present	Assistant Professor, Department of Astronomy, University of Michigan
2012 – 2013	Post-doctoral Fellow, Presidents Post-doctoral Fellowship Program, University of Michigan
2012	Assistant Research Scientist, Department of Astronomy, University of Michigan
2009 – 2012	Kavli Post-doctoral Fellow, Kavli Institute for Cosmological Physics, University of Chicago

Summary of Evaluation:

Teaching – Professor Sharon has taught at all levels in the Department of Astronomy with a strong record of success. Regardless of whether she is teaching undergraduate or graduate classes, she has created engaging, supportive, and successful learning environments. Professor Sharon places strong emphasis on connecting with all students, even in large classrooms. This attentiveness to the success of her students stands out as providing an exceptional commitment to education. In this regard, Professor Sharon is an effective mentor for post-doctoral scholars and graduate students resulting in many co-authored publications in field-leading journals.

Research – Professor Sharon is recognized as one of the world’s experts in the analysis of gravitationally lensed galaxies. Gravitational lens is a distribution of matter between a distant light source and an observer. This area of astrophysics brings the most distant objects in the Universe into view allowing for unprecedented exploration that probes the time during which galaxies were being assembled. Professor Sharon’s work has had an impact on our understanding of the formation of structure in the Universe, the formation of galaxies, and the distribution of dark matter within the clusters of galaxies that are responsible for the lensing. She has been a leader in the forefront of this field and her work enables a vast array of scientific exploration by her research group and leading astrophysicists. Professor Sharon, her students, and her post-doctoral fellows are pioneering our understanding of how galaxies such as our own form and evolve.

Recent and Significant Publications:

“RELICS: A strong lens model for SPT-CLJ0615-5746, a $z=0.972$ cluster,” with R. Paterno-Mahler, et al., *The Astrophysical Journal*, 863, 2018, p. 154.

“Star formation at $z = 2.481$ in the lensed galaxy SDSS J1110+6459: Star formation down to 30 pc scales,” with T. L. Johnson, et al., *The Astrophysical Journal*, 843, 2017, p. L21.
“A multi-wavelength mass analysis of RCS2 J232727.6-020437, A $\sim 3 \times 10^{15} M_{\odot}$ galaxy cluster at $z=0.7$,” with M. D. Gladders, et al., *The Astrophysical Journal*, 814, 2015, p. 21.
“Revised lens model for the multiply imaged lensed supernova, ‘SN Refsdal’ in MACS J1149+2223,” with T. L. Johnson, *The Astrophysical Journal Letters*, 2015, L26.

Service – Professor Sharon has established an exemplary record of service at all professional levels. She has led the department’s expanding diversity efforts as the founding chair of their Diversity, Equity, and Inclusion Committee. She has also served the graduate program in Astronomy in various roles, including admissions and the preliminary examination committee, which she will chair in 2019. Her valuable service extends to the national scale where she serves as the chair of the Space Telescope Users Committee. The Hubble Space Telescope is the one of the mainstay instruments in her field and the importance of this role cannot be overstated.

External Reviews:

Reviewer (A)

“...[Professor Sharon] sets a strong example for a researcher aiming at the most precise answers to several questions of fundamental and methodical importance. ... her models for gravitationally lensing galaxy clusters have now for many years been the best available, and by a large margin. This explains why Keren is part of many observational programmes to which she contributes not only her unparalleled expertise in galaxy-cluster modelling, but also her advice on what can and what cannot be safely concluded from the data, and on the quantitative uncertainty attached to these conclusions. In terms of theoretical understanding, insight, and the quality of her results, I would rank Keren higher than any of her competitors.”

Reviewer (B)

“...Dr. Keren Sharon is an outstanding and productive researcher, and a well-recognized leader in her field. She is simply one of the best.”

Reviewer (C)

“What was impressive in her overall service was her focus and attention to diversity, equity and inclusion (DEI). These are important areas that are finally receiving attention.”

Reviewer (D)

“Her work guarantees seriousness, cleanliness and reliability. Due to Dr. Sharon’s experience and the quality of the team of researchers that she has assembled, considerable progress is expected in this area of research. There are five or six groups in the world that work on this topic and she and her team have managed to position themselves among the best and most productive.”

Reviewer (E)

“...Dr. Sharon is every bit as serious and creative as an educator as she is as a scientist.”

Reviewer (F)

“Keren’s impressive success in winning ground-based large-telescope time for these projects

(some 50 nights as PI over the last 6 years) is a testament both to her creativity and to the community's high regard for her. This is on top of the tens of space-telescope projects that she has led or co-led, and which have brought with them over \$1M in funding."

Reviewer (G)

"Prof. Sharon is one of a small number (~maybe two dozen or so) experts in the field of strong gravitational lensing. She is both interested in the phenomenon itself (modeling the mass distributions, understanding the systematic uncertainties, optimizing lensing survey strategies) as well as the unique investigations of the background galaxies allowed by the high magnification. As such, Prof. Sharon has papers that are purely about lensing and other papers focused on galaxy formation. But really, she operates as few do, in the space between these two fields, and is knowledgeable about both."

Summary of Recommendation:

Professor Sharon is one of the leading experts in her research field. Her sophisticated lensing models allow us to study star formation rates in distant galaxies and have the potential to revolutionize our understanding of star formation at its peak. She is an outstanding teacher and has provided valuable service to her department, college, university, and to the wider research community. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Keren Sharon be promoted to the rank of associate professor of astronomy, with tenure, College of Literature, Science, and the Arts.



Elizabeth R. Cole, Interim Dean
Professor of Women's Studies, Psychology,
and Afroamerican and African Studies
College of Literature, Science, and the Arts

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