Princeton University

Honors Faculty Members
Receiving Emeritus Status

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The biographical sketches were written by
colleagues in the departments of those honored.

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Faculty Members Receiving Emeritus Status

Jeremiah P. Ostriker

Jeremiah Ostriker, a distinguished scholar and intellectual leader, has been part of the Princeton community for more than 45 years. After receiving his Ph.D. from the University of Chicago in 1964 and spending a postdoctoral fellowship year in Cambridge, Jerry came to Princeton as a lecturer in 1965. He became an assistant professor the following year. Rising through the ranks, he served as chair of the Department of Astrophysical Sciences from 1974-1995. After Lyman Spitzer's retirement, Jerry was appointed the Charles A. Young Chair on the Class of 1890 Foundation. In 1995, he became the provost of Princeton. After stepping down as provost, he spent three years as the Plumian Professor of Astronomy and Experimental Philosophy at the University of Cambridge. In 2005, he returned full time to Princeton and served as director of the Princeton Institute for Computational Science and Engineering (PICSiE). Since 2008, he has been the treasurer of the U.S. National Academy of Sciences.

Through his scholarship, Jerry has changed the way that astrophysicists understand the universe through his important contributions across a wide range of fields.

Before the early 1970s, most astronomers shared an unstated assumption that almost all of the mass in galaxies resided in visible stars. Jerry was arguably the most important single figure in convincing the astronomical community that this natural and seductive assumption is wrong, by his eloquent advocacy for the then-radical new model in which the visible stars in galaxies were only a minor pollutant at the center of a much larger halo of dark matter of unknown composition. This 30-fold expansion of the scale and mass of galaxies was the grandest revision in our understanding of galaxies since Harlow Shapley's work in 1920, and after considerable initial resistance, has now been confirmed beyond any reasonable doubt.

In a quite different arena, Jerry's work, especially with Chris McKee, changed the way we think about the interstellar medium, the immense volume that lies between stars. Jerry's work has clarified the dynamics and evolution of supernova remnants, the role of cloud evaporation in the interstellar medium, and the processes by which supernova shock waves accelerate cosmic rays. His conclusions have been extended to the intergalactic medium, in particular to the study of intergalactic gas clouds and their role in the formation of galaxies.

Jerry and his collaborators (in particular, Paul Steinhardt) were among the first and most influential advocates of the so-called "concordance" model of cosmology, in which the geometry of the universe is flat and about 30 percent of the mass density is in matter and 70 percent in vacuum energy or cosmological constant. This model has been dramatically confirmed by observations of the cosmic microwave background and many other phenomena in the past decade, and now forms the centerpiece of modern cosmology.

Jerry has also played a central role in synthesizing cosmological theories and observations; his combined grasp of theoretical cosmology and the enormously diverse collection of relevant observations has been matched by few others. He and his collaborators have developed sophisticated numerical simulations of the evolution of the early universe and the formation of structure in cosmology. Working with his student Renyue Cen, his numerical simulations revolutionized our view of the intergalactic medium. Their 1994 paper established our now standard picture of the Lyman alpha forest. Their 2000 paper suggested that most of the atoms in the local universe are in the intergalactic medium, a picture that appears to be confirmed by recent UV observation. His recent focus on numerical tools is particularly striking as the numeracy of most researchers declines with age.

Remarkably, Jerry's bold and provocative research style is accompanied by an uncommon dedication to the scientific and academic communities: He served as department chair at Princeton for 21 years, spent six years as provost and has served on three decennial surveys of astronomy and astrophysics. Jerry has also been a generous mentor to many generations of graduate students and postdoctoral fellows. His former students are now among the leaders of astrophysics.

Jerry's most important administrative contribution to astronomy was probably as one of the leaders of the Sloan Digital Sky Survey (SDSS). He was central to developing its scientific vision and to the initial fundraising from private individuals, universities, the Sloan Foundation and federal funding agencies. When SDSS was behind schedule and over budget, he led the negotiations with the partner universities and the Sloan Foundation to defer invoices and to secure additional funding and time. He brought in so many new partners that the second phase of SDSS had a surplus of nearly a million dollars, which was used to fund public data access after the survey was complete. Jerry was one of the primary advocates for open public access to SDSS data, a model that has contributed greatly to the impact of SDSS and that is now being copied by similar projects such as the Large Synoptic Survey Telescope.

As provost, Jerry was a very effective, influential and creative leader of the academic and financial aspects of the University. In particular, he was one of the creative forces behind Princeton's pioneering initiatives in financial aid, which have succeeded not only in making Princeton significantly more attractive to a much more diverse group of students, but in inducing important changes in financial aid throughout higher education. Throughout his time as provost, he continued to insist in the constant need to find new ways to continually improve the academic quality of all of Princeton's schools, academic departments and programs. In short, Princeton has ample evidence to be as proud of his contributions as provost as with his undoubted contribution as a scholar.

Jerry's contributions to science have been recognized through his membership in the American Academy of Arts and Sciences, the National Academy of Sciences and the American Philosophical Society, and through foreign membership in the Royal Netherlands Academy of Arts and Sciences and the Royal Society of London. He has been awarded the American Astronomical Society's Warner and Russell prizes and the Royal Astronomical Society's Gold Medal. In 2000, President Bill Clinton awarded him the highest honor in the United States for a scientist, the National Medal of Science.