

Princeton University
Honors Faculty Members Receiving
Emeritus Status



June 2007

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

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Scott Duncan Tremaine



Scott Tremaine was born in Toronto, Canada, on May 25, 1950. After receiving his undergraduate degree at McMaster University in 1971, Scott came to Princeton to study physics. As a graduate student at Princeton, he began to have a significant impact in galactic dynamics. In his first research project, he worked with Lyman Spitzer and Jeremiah Ostriker, his thesis adviser, on the formation of galactic nuclei. His thesis explored the dynamical evolution of galaxies. By showing that galaxies are dynamically evolving systems, Scott punctured the dreams of many cosmologists who hoped to use them as standard candles.

As a postdoctoral fellow at Caltech, Scott and Peter Goldreich developed dynamical models of Saturn's and Uranus's rings. Based on their stability analysis, they concluded that narrow rings must have tiny shepherd moons that supported these thin structures. When Voyager 2 reached Saturn in 1981, it discovered the moons Prometheus and Pandora shepherding Saturn's narrow F ring. When it reached Uranus in 1986, it again found the tiny moons predicted by Scott and Goldreich.

Scott returned to the town of Princeton in 1978 as a long-term member at the Institute for Advanced Study. During his second sojourn in Princeton, he continued to expand into new areas of astrophysics. Scott and James Gunn showed how dynamical arguments constrain the properties of the dark matter. Scott continued his work with Goldreich on disk dynamics.

In 1981, Scott moved to MIT with two other young colleagues from Princeton, Charles Alcock and Len Cowie. In 1985, Scott returned to his native Canada and founded the Canadian Institute for Theoretical Astrophysics. Working with

his colleague, Dick Bond, Scott built up one of the leading international centers for theoretical astrophysics.

In astrophysics, books rarely shape a field. However, Scott Tremaine and James Binney's *Galactic Dynamics* textbook had a dramatic effect on how astronomers think about dynamics. As soon as it was published in 1987, *Galactic Dynamics* became the bible for the field and shaped how all astronomers approach problems in dynamics.

Scott, his students, and his postdocs have made many fundamental advances in galactic and solar system dynamics. Their work explained the formation of the comet cloud and the mysterious double nucleus structure of the Andromeda galaxy, measured the size and extent of our own galaxy, and calculated the growth and properties of black holes.

Scott's second tenure at Princeton University began in 1997. He served as department chair for eight years. In 2002, he became the fourth Charles A. Young Professor on the Class of 1897 Foundation. Scott and other members of the "Nuker" team used the Hubble Space Telescope to show that all nearby spheroidal galaxies host black holes and found a scaling relationship between black hole mass and galaxy luminosity.

Scott's many contributions to astronomy have been recognized by the community. He is a member of the National Academy of Sciences, an associate of the Royal Astronomical Society, a fellow of both the Royal Society of Canada and the Royal Society of London, and a foreign honorary member of the American Academy of Arts and Sciences. Among his many prizes are the Warner Prize (1983), the Steacie Prize (1989), the Heinemann Prize (1997), and the Brouwer Award (1997). In recognition of his scientific contributions, Asteroid 3806 was named Asteroid Tremaine.

While Scott is retiring from the University, he continues to play a leading role in the local astrophysics community. He is now the Richard Black Professor of Astrophysics at the Institute for Advanced Study.