

# Princeton University

HONORS FACULTY MEMBERS  
RECEIVING EMERITUS STATUS



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

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# JOHN RICHARD GOTT III



Professor of astrophysical sciences J. Richard Gott will transfer to emeritus status on July 1, 2016, after 40 years on the faculty.

Richard was born and raised in Louisville, Kentucky. After receiving a bachelor's degree in physics from Harvard University, he came to Princeton, where he earned a Ph.D. in astrophysics in 1973. After a postdoctoral fellowship at the California Institute of Technology and a visiting fellowship at Trinity College at the University of Cambridge, Richard joined Princeton's faculty in 1976. He developed one of the nation's first courses in general relativity for undergraduates and astrophysics courses for nonscience majors, as well as graduate courses in relativistic physics. He also ran the Peyton Observatory Open House program for many years.

Richard is noted for his contributions to cosmology and general relativity. His paper "On the Infall of Matter into Clusters of Galaxies and Some Effects on Their Evolution," coauthored with Jim Gunn, has received over 1,500 citations. He proposed that the clustering pattern of galaxies in the universe should be sponge-like — a prediction now confirmed by numerous surveys. His latest book, *The Cosmic Web: Mysterious Architecture of the Universe* (Princeton University Press, 2016), tells the story of how Richard and many other scientists made the connections to understand how the universe is arranged.

With doctoral student Mario Juric, Richard in 2004 used the Sloan Digital Sky Survey to produce a diagram that came to be known as the "Map of the Universe," from Earth looking back to the Big Bang, and which appeared in *The New York Times*, *New Scientist*, and *Astronomy*. Richard and Juric are in the Guinness World Records 2006 for finding the largest structure in the universe, the Sloan Great Wall of Galaxies (1.37 billion light years long). Richard's long fascination with maps led to his book with Bob Vanderbei, *Sizing Up the Universe* (National Geographic, 2010). In this book, they use scaled maps, object comparisons, and beautiful space photographs to demonstrate the actual size of objects in the

cosmos — from Buzz Aldrin’s historic footprint to the visible universe and beyond.

The area of Richard’s work that perhaps has received the most popular attention has been time travel. He discovered exact solutions to Einstein’s field equations for the gravitational field around one cosmic string (in 1985) and two moving cosmic strings (in 1991). This second solution has been of particular interest because, if the strings move fast enough, at nearly the speed of light, time travel to the past can occur. His 1997 paper with doctoral student Li-Xin Li, “Can the Universe Create Itself?” explores the idea of how the laws of physics may permit the universe to be its own mother. Richard has applied Copernican arguments to address questions ranging from “How long will humanity survive?” to the need for space travel. His book *Time Travel in Einstein’s Universe* (Houghton Mifflin, 2001) was selected by *Booklist* as one of four “Editors’ Choice” science books for 2001.

Richard has received the Robert J. Trumpler Award, an Alfred P. Sloan Fellowship, the Astronomical League Award, and Princeton’s President’s Award for Distinguished Teaching. He was for many years chair of the judges for the Westinghouse and Intel Science Talent Search.