

Special Public Presentation

Department of Physics & Astronomy, TAMU-Commerce

Jan 30, Thursday, 4-5 PM in Science Building 127

(coffee and cookies will be served at 3:50 PM)

THE ACCELERATING EXPANDING UNIVERSE

**- DARK MATTER, DARK ENERGY, AND EINSTEIN'S COSMOLOGICAL
CONSTANT, OR WHY JIM PEEBLES WAS AWARDED HALF OF THE 2019
PHYSICS NOBEL PRIZE**

Dr. Bharat Ratra

Kansas State University



Dr. Bharat Ratra earned an MS (1982) degree in physics at the Indian Institute of Technology Delhi, and a Ph.D. degree (1986) in physics at Stanford University. His Ph.D. research was on quantum cosmology and superstrings. He worked as a post-doc at SLAC, Princeton University, Caltech, and MIT. In 1996, Dr. Ratra began his appointment as an assistant professor of physics at Kansas State University, where he is currently a distinguished professor of physics and does research in cosmology. In 1988, Ratra and Jim Peebles proposed the first dynamical dark energy model. More information about Dr. Ratra and his research can be found at

<https://www.phys.ksu.edu/people/tt-faculty/ratra-bio.html>

Abstract

Dark energy is the leading candidate for the mechanism that is responsible for causing the cosmological expansion to accelerate. In this non-technical talk, Bharat Ratra will describe the astronomical data which persuade cosmologists that (as yet not directly detected) dark energy and dark matter are by far the main components of the energy budget of the universe at the present time. He will review how these observations have led to the development of a quantitative "standard" model of cosmology that describes the evolution of the universe from an early epoch of inflation to the complex hierarchy of structure seen today. He will also discuss the basic physics, and the history of ideas (many developed by Jim Peebles), on which this model is based.