THE UNIVERSITY OF MAINE
Physics and Astronomy

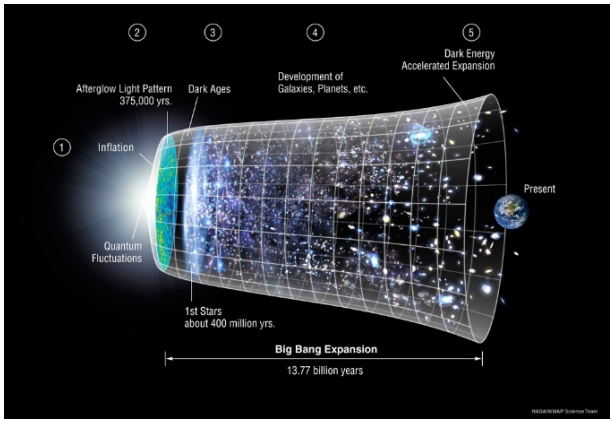
PUBLIC PRESENTATION

Friday, Sept. 20, 2024, 7:00 pm Bennett Hall – Room 140

The Accelerating Expanding Universe: Dark Matter, Dark Energy, and Einstein's Cosmological Constant

Dr. Bharat Ratra
Kansas State University

Dark energy is the leading candidate for the mechanism that is responsible for causing the cosmological expansion to accelerate. Dr. Ratra will describe the astronomical data that persuade cosmologists that (as yet undetected) 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. In this non-technical talk, he will also discuss the basic physics, and the history of ideas, on which this model is based.



Dr. Bharat Ratra is a distinguished professor of physics at Kansas State University. He works in the areas of cosmology and astro-particle physics. He researches the structure and evolution of the universe. Two of his interests are developing models for the large-scale matter and radiation distributions in the universe and testing these models by comparing predictions to observational data. In 1988, Ratra and Jim Peebles proposed the first dynamical dark energy model.

Ratra is a founding member of the North Central Kansas Astronomical Society and of the Kansas State University Center for the Understanding of Origins. He is actively involved in science outreach efforts, including the National Science Foundation QuarkNet program for high school science teachers, as well as outreach efforts with various elementary, middle and high school science teachers and schools.

Ratra joined Kansas State University in 1996 as an assistant professor of physics. He was a postdoctoral fellow at Princeton University, the California Institute of Technology and the Massachusetts Institute of Technology. Ratra earned a doctorate in physics from Stanford University and a master's degree from the Indian Institute of Technology in New Delhi.