Wichita State University Physics Seminar Series

A Lecture for the Public

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, Distinguished Professor of Physics, Kansas State University

Wednesday, 5 February 2020 at 2 pm, 128 Jabara

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.

About the speaker: Dr. Ratra is a distinguished professor of physics at Kansas State University. He works in the areas of cosmology and astroparticle physics, and researches the structure and evolution of the universe. Two of his current principal 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, Dr. Ratra and Jim Peebles proposed the first dynamical dark energy model. Dark energy is the leading candidate for the mechanism that is responsible for causing the cosmological expansion to accelerate.

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