

KAVLI INSTITUTE FOR THEORETICAL PHYSICS

Presents

the Thirty Third KITP Public Lecture

sponsored by Friends of KITP

Robert Kirshner

Einstein's Blunder Undone—

the discovery of cosmic acceleration

ALBERT EINSTEIN'S GENERAL THEORY OF RELATIVITY explained gravity as the geometry of space and time. Einstein promptly applied these ideas to the universe as a whole in 1917. He needed to add in a "cosmological constant" to make a static universe, to agree with the astronomical observations of his day.

Ten years later, astronomical evidence began to accumulate, we do not live in a universe that is static, but an expanding one. Einstein's introduction, then retraction, of the cosmological constant has been dubbed, 'Einstein's greatest blunder' (though not by Einstein!)

One of the great recent surprises in science is the astronomical discovery in 1998 that the expansion of the Universe is speeding up. In this talk, I will describe how we know the Universe is accelerating from the measurement of exploding stars.

The explanation for this accelerated expansion on the largest known scale is that it is driven by a mysterious "dark energy" which may be a result of fundamental forces acting on the smallest distances in nature. In a strange turn of events, the simplest form of the dark energy is something that looks very much like a modern version of Einstein's cosmological constant.

In this talk, I will sketch the evidence for this strange new picture of the Universe, and describe ongoing investigations that may reveal the nature of the dark energy.

About the Speaker

ROBERT P. KIRSHNER, Clowes Professor of Science at Harvard University, one of the world's leading astronomers and popular public lecturer on science, and author of "The Extravagant Universe: Exploding Stars, Dark Energy, and the Accelerating Cosmos." Kirshner is described by *Discover Magazine* as a "raconteur of exceptional eloquence," and by *New Scientist* as "one of the liveliest and most amusing lecturers in the world of astronomy." His research has resulted in significant and surprising breakthroughs on the nature of our universe.



Admission is Free
Limited Seating

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(805) 893-4111

for reservations.

To make special arrangements to accommodate a disability, call the KITP at the number above.

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Wednesday, April 11, 2007

8:00 pm

Kavli Institute for Theoretical Physics, Main Seminar Room