SCIPP Outreach Workshop 2000: Lecture Abstracts

The Standard Model and Beyond
Dr. Michael Dine

This talk will survey the theoretical ideas underlying our current understanding of particle physics: the "Standard Model," involving quarks, leptons, gluons and the like. The experimental evidence for the picture will be explained. While this model is very successful, we know that it is incomplete. Some ideas for a more complete theory, and their experimental implications, will be discussed. The ideas to be discussed involve Einstein's general relativity, supersymmetry, and string theory.

Discoveries of Extrasolar Planets and their Implications on the Formation and Destiny of Planetary Systems
Dr. Doug Lin

I will discuss recent discoveries of extrasolar planets. These findings suggest that planets are ubiquitous and planetary systems have diverse dynamical properties. Some of these properties may be due to the formation conditions of protoplanets while others are the outcomes of long term dynamical evolution.

GLAST: The Next Generation Orbiting High-Energy Gamma-Ray Telescope
Dr. Robert Johnson

The field of high-energy gamma-ray astrophysics was revolutionized by the EGRET experiment on the Compton Gamma-Ray Observatory, which observed hundreds of point sources. What is left of EGRET now lies at the bottom of the Pacific Ocean, but R&D and engineering of its successor, GLAST, has been in progress for 8 years already. Construction of the GLAST instrument will begin soon, and the mission is scheduled to launch in 2005. I will explain how GLAST will detect and measure gamma rays with far greater sensitivity and precision than EGRET accomplished, illustrate some of the engineering development already accomplished, and talk about the types of exotic sources of high-energy radiation that GLAST will observe throughout our galaxy and the universe.

The Role of History in Science Education
Dr. Michael Nauenberg

No Abstract Included