2008 BUHL LECTURE

A Brief History of Dark Matter

Joel Primack

Tuesday, April 22, 2008
4:30 p.m. Mellon Institute Auditorium
4400 Fifth Avenue

Reception Immediately following, Mellon Institute Lobby, Free and Open to the Public

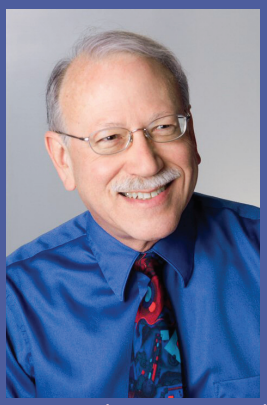
Supercomputer simulation of colliding galaxies with supermassive black holes at their centers. By Di Matteo, Springel and Hernquist

Abstract

Although the first evidence for dark matter was discovered in the 1930s, it was in the early 1980s that most astronomers became convinced that most of the mass holding galaxies and clusters of galaxies together is invisible. For two decades, theories were proposed and challenged, but it wasn't until the beginning of the 21st century that the "double dark" standard cosmological model was accepted: cold dark matter—matter different from that which makes up the planets, stars, and us—plus dark energy together making up 95 percent of the universe.

The challenge now is to understand the underlying physics of the particles that make up dark matter and the nature of dark energy. The lecture includes beautiful astronomical videos, and it can be enjoyed by everyone, from those who know nothing about modern cosmology to experts in the field.

The Buhl Lecture, sponsored by Carnegie Mellon's Department of Physics, is funded under the auspices of the Buhl Professorship in Theoretical Physics, which was established at Carnegie Mellon in 1961 by the Buhl Foundation. The professorship was created to support outstanding theoretical scientists who would both impact theoretical research and help establish directions for experimental investigations.



About Joel Primack

Joel Primack, professor of physics at the University of California, Santa Cruz, initiated and helped develop the cold dark matter theory, which has now become the standard theory of the origin and evolution of structure in the universe. He and his team use some of the world's most powerful super-computers to simulate the evolution of the universe, and they compare the results with observational data. Primack is a fellow of the American Physical Society (APS) and the American Association for the Advancement of Science (AAAS). He has recently chaired the APS Forum on Physics and Society, as well as the AAAS Committee on Science, Ethics, and Religion; and he served on the recent Beyond Einstein study of the National Academy of Sciences.

Sponsored by the Carnegie Mellon Department of Physics. For more information, please contact 412-268-6681. This lecture is funded under the auspices of the Buhl Professorship in Theoretical Physics, which was established at Carnegie Mellon in 1961 by the Buhl Foundation in support of an outstanding theoretical scientist who would both impact theoretical research and help establish directions for experimental investigations.

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