

WHAT'S NEW IN PHYSICS?



Nobel Laureate Anthony J. Leggett

Does the Everyday World Really Obey Quantum Mechanics?

**December 1, 2005
7:00 p.m.**

**Pruyne Hall (Fayerweather 115)
Amherst College**

Free and open to the public.

Quantum mechanics has been enormously successful in describing nature at the atomic level, and most physicists believe that it is in principle the "whole truth" about the world even at the everyday level. However, such a view *prima facie* leads to a severe problem: in certain circumstances, the most natural interpretation of the theory implies that no definite outcome of an experiment occurs until the act of "observation". For many decades this problem was regarded as "merely philosophical", in the sense that it was thought that it had no consequences which could be tested in experiment. However, in the last dozen or so years the situation has changed very dramatically in this respect. I will discuss the problem, some popular "resolutions" of it, the current experimental situation and prospects for the future.

Anthony J. Leggett was born in London, England in March 1938. He attended Balliol College, Oxford where he majored in *Literae Humaniores* (classical languages and literature, philosophy and Greco-Roman history), and thereafter Merton College, Oxford where he took a second undergraduate degree in Physics. He completed a D. Phil. (Ph. D.) degree in theoretical physics under the supervision of D. ter Haar. After postdoctoral research in Urbana, Kyoto and elsewhere he joined the faculty of the University of Sussex (UK) in 1967, being promoted to Reader in 1971 and to Professor in 1978. In 1983 he became John D. and Catherine T. MacArthur Professor at the University of Illinois at Urbana-Champaign, a position he currently holds. His principal research interests lie in the areas of condensed matter physics, particularly high-temperature superconductivity, glasses and ultracold atomic gases, and the foundations of quantum mechanics. He shared the 2003 Nobel Prize in Physics for his theoretical work on superfluid Helium-3.

