



# Colloquium

## **The Universe's Baby Picture**

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The Wilkinson Microwave Anisotropy Probe (WMAP) has made an accurate full-sky measurement of the microwave background temperature and polarization fluctuations. The new polarization measurements probe both the galactic magnetic field and the physics of the very early universe. The WMAP measurements rigorously test our standard cosmological model and provide an accurate determination of basic cosmological parameters (the curvature of the universe, its matter density and composition). When combined with other astronomical measurements, the measurements constrain the properties of the dark energy and the mass of the neutrino. The observations also directly probe the physics of inflation: the current data imply that the primordial fluctuations were primarily adiabatic and nearly scale invariant.

While there appears to be a standard model for cosmology, many key cosmological questions remain unanswered: what happened during the first moments of the big bang? what is the dark energy? what were the properties of the first stars? I will discuss the role of on-going and future CMB observations in addressing these key cosmological questions.

**Wednesday, September 20, 2006**

**4:15 P.M. (Refreshments at 4:00 P.M.)**

**Lyman Spitzer Building, M. B. Gottlieb Auditorium**