CMB Instrumentation

CMB Astrophysics Theory

Detector development of wafer-scale bolometer arrays using photolithographic techniques for CMB experiments.

1. **APEX-SZ:**
   - Galaxy cluster search using Sunyaev-Zel'dovich Effect
   - UC Berkeley, LBNL, and MPIfR Bonn
   - 12m telescope on Atacama Plateau
   - 320 bolometer array

2. **South Pole Telescope:**
   - Univ. Chicago, UC Berkeley, Case Western, Harvard CfA, Univ. Illinois, LBNL
   - 10m telescope at South Pole
   - 1000 bolometer array

3. **PolarBear:**
   - UC Berkeley, LBNL, UC San Diego
   - 3m telescope on White Mountain, CA
   - Specifically designed for CMB polarization
   - Test bed for new technologies
   - "Multi-color" pixels with dual polarization
   - Phase 1: 320 detectors
   - Phase 2: 1200 detectors

CMB and Cosmology

TES Bolometer Arrays for CMB Polarization and SZ Measurements