



"Ultra-High Energy Cosmic Rays and The Pierre Auger Observatory"



Ultra-high energy cosmic rays are the most energetic particles in the universe but their properties are poorly understood. While most are charged, their actual composition is unknown. There also is little knowledge of their extragalactic sources due to deflection of their trajectories in intervening magnetic fields. The extremely low flux of these particles, less than 1 particle $\text{km}^{-2} \text{yr}^{-1}$ above 10^{18} eV, necessitates indirect detection methods using the extensive air showers initiated when the cosmic ray primary interacts with air molecules within the atmosphere. Located in the high pampa of Argentina, the Pierre Auger Observatory is the largest cosmic ray detector in the world and combines two traditional air shower detection techniques: air fluorescence telescopes and water Cherenkov ground-based detectors. These allow precision measurements of the energy spectrum and the arrival directions, as well as data to infer the chemical composition of the cosmic ray primaries. I will discuss recent results from the Observatory as well as my contributions on magnetic corrections for source identification.



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MONDAY, December 10, 2012 : 1:00 PM, 705 Pupin Hall