

# Physics Department Colloquium

## **“A Hunt for the Sources of Ultra High Energy Cosmic Rays”**

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Ground-breaking results from the HiRes experiment and the Pierre Auger Observatory have established that ultrahigh-energy cosmic rays (UHECRs) are known elementary particles or nuclei, and are originated in astrophysical sources. Even though the requirements to produce cosmic rays with energy 40 EeV and above are staggering and not all astrophysical sources fulfill these requirements, a positive source identification is still elusive. I will examine, using theoretical results and observational data from the recently launched Fermi Gamma ray Space Telescope, the evidence claimed by the Auger collaboration that UHECRs are originated from nearby Active Galactic Nuclei; most notably from Centaurus A. I will also present high-energy gamma ray data from the Gamma Ray Bursts (GRBs) as collected by Fermi and theoretical model of emission by UHECRs assumed to be accelerated by GRBs. Cosmic ray data combined with high-energy gamma ray and neutrino data will shed light on the origin of UHECRs in near future.

**Monday, March 2, 2009**  
**4:00 PM in 334 JFB**