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CENTER FOR THEORETICAL PHYSICS



# Sommerfeld Theory Colloquium

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## Ultrahigh Energy Cosmic Rays

The highest energy cosmic rays hit Earth at a rate of about 1 per square km */per century/*. Being so rare, it has been very difficult to study them to determine what they are composed of and to identify their sources. In this colloquium I will describe the Pierre Auger Observatory, which now has over 50 UHE CRs -- having energies greater than  $6 \cdot 10^{19}$  eV. These events are particularly valuable because they must have originated relatively nearby in cosmological terms, and apparently many of them have low magnetic deflection. Although the statistics are still too low for definitive conclusions, the present data seems to difficult to reconcile with the originally favored source candidates -- extremely powerful quasars or Gamma Ray Bursts -- and expectations that the highest energy CRs are protons must now also be questioned. I will report on these results and the very interesting new perspective which seems to be emerging.

Wednesday, 27<sup>th</sup> May 09, 10:30 h, Room 348 / 349, Theresienstr. 37 / III