# Physics Colloquium

**Michigan Technological University**

Thursday, December 15, 2011 at 4:00 pm
Room 139 Fisher Hall

## An Analysis of the Pierre Auger Cosmic Ray Energy Spectrum from Different Regions of the Sky


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**Abstract:** One of the most important questions in ultra high energy cosmic ray physics is the ability to identify the sources of such high energy particles. But due to galactic and extragalactic magnetic deflection, identification of such sources solely based on arrival directions of individual cosmic ray events is difficult. Indeed, because of the Greisen-Zatsepin-Kuzmin effect, only sources relatively close to Earth (<75 MPc) will even potentially be identifiable. In order to overcome these difficulties, one must combine the information obtained from arrival directions with the energies of the events in that region to attempt to come to any sort of conclusion. We have developed two related methods to analyze the cosmic ray spectra from different regions of the sky in an attempt to identify such sources. I will describe these two new methods and characterize their advantages and limits. I will also discuss their application to data from the Pierre Auger Observatory and the preliminary results from that analysis.


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