

From the Geosphere to the Cosmos: ASPERA Workshop

Abstract

Lightning Studies at Pierre Auger Observatory

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An initial set of two Lightning Mapping Array (LMA) stations has been set up at the Pierre Auger Cosmic Ray Observatory to begin studying the possible effects of high energy cosmic rays on the initiation of lightning and electrical discharges in thunderstorms. In this presentation I will describe the ability of VHF time-of-arrival mapping systems to provide 3-dimensional images of lightning inside storms and the proposed methodology of using the joint LMA and cosmic ray data to study lightning initiation questions. I will also discuss how a full LMA network could be set up at Pierre Auger and how it would be beneficial both to operational issues and scientific studies of the Observatory.

For examples of online real time lightning mapping data, see <http://lightning.nmt.edu/oklma> and <http://branch.nsstc.nasa.gov/PUBLIC/NALMA/>.

For a detailed description of the LMA system, see Thomas et al.,

Accuracy of the Lightning Mapping Array, J. Geophys. Res. 109, D14207,

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