



MINOS atmospheric neutrino contained events

A. HABIG FOR THE MINOS COLLABORATION

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Abstract: The Main Injector Neutrino Oscillation Search (MINOS) experiment has continued to collect atmospheric neutrino events while doing a precision measurement of NuMI beam ν_μ disappearance oscillations. The 5.4 kton iron calorimeter is magnetized to provide the unique capability of discriminating between ν_μ and $\bar{\nu}_\mu$ interactions on an event-by-event basis and has been collecting atmospheric neutrino data since July 2003. An analysis of the neutrino events with interaction vertices contained inside the detector will be presented.

Introduction

The MINOS experiment uses two similar iron/scintillator calorimeters to measure the properties of the NuMI neutrino beam over a long baseline, and has precisely measured the neutrino flavor oscillations [4] previously seen in atmospheric neutrinos [2]. The 5400 ton Far Detector is located 700 m (2070 mwe) deep in the Soudan Mine Underground Lab in northern Minnesota [3]. The rock overburden reduces the rate of cosmic ray muons reaching the Lab by a factor of 10^5 , allowing the detection of atmospheric ν via their charged-current production of leptons. These interactions can occur in the detector itself (“contained vertex interactions”) or in the rock surrounding it (“upward-going muons”). This paper expands on the previously published MINOS contained vertex analysis [1] of 6.18 ktyr.

The bulk of this paper will be present in the final version of the conference proceedings.

References

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