

PEM006-17

会場:101

時間:5月25日 17:00-17:15

## SciBar 検出器を用いたメキシコ・ミュオン計の新設計画 1: 小型試験機による観測結果に基づく性能評価

### A new muon observation using the SciBar detector in Mexico I: Performance evaluation with a proto-type detector

中野義丈<sup>1</sup>, 鶴指眞李<sup>1</sup>, 宗像 一起<sup>1\*</sup>, 加藤千尋<sup>1</sup>, 安江新一<sup>1</sup>, 小財正義<sup>1</sup>, 永井雄也<sup>2</sup>, さこ隆志<sup>2</sup>, 松原豊<sup>2</sup>, 伊藤好孝<sup>2</sup>, 三塚岳<sup>2</sup>, ディエゴ・ロペス<sup>2</sup>, 柴田祥一<sup>3</sup>, 小島浩司<sup>4</sup>, 土屋晴文<sup>5</sup>, 渡邊恭子<sup>6</sup>, 小井辰巳<sup>7</sup>

Y. Nakano<sup>1</sup>, M. Tsurusashi<sup>1</sup>, Kazuoki Munakata<sup>1\*</sup>, C. Kato<sup>1</sup>, S. Yasue<sup>1</sup>, M. Kozai<sup>1</sup>, Y. Nagai<sup>2</sup>, T. Sako<sup>2</sup>, Y. Matsubara<sup>2</sup>, Y. Ito<sup>2</sup>, G. Mitsuka<sup>2</sup>, D. Lopez<sup>2</sup>, S. Shibata<sup>3</sup>, H. Kojima<sup>4</sup>, H. Tsuchiya<sup>5</sup>, K. Watanabe<sup>6</sup>, T. Koi<sup>7</sup>

<sup>1</sup> 信州大理, <sup>2</sup> 名大 STE 研, <sup>3</sup> 中部大工, <sup>4</sup> 愛知工業大, <sup>5</sup> 理研, <sup>6</sup> 宇宙航空研究開発機構, <sup>7</sup> SLAC 国立加速器研究所

<sup>1</sup>Physics Department, Shinshu University, <sup>2</sup>STE laboratory, Nagoya University, <sup>3</sup>Faculty of Engineering, Chubu University,

<sup>4</sup>Aichi Institute of Technology, <sup>5</sup>RIKEN, <sup>6</sup>JAXA, <sup>7</sup>SLAC National Accelerator Laboratory

We plan to fill a gap existing in viewing directions of the Global Muon Detector Network (GMDN) by adding a new detector at Sierra Negra, a high altitude (4600 m a.s.l.) mountain in Mexico. The detector will be installed primarily for observing solar neutrons, but we plan to use it also as a muon detector. The detector (SciBar) consisting of ~15000 scintillator strips (2.5x1.3 x 300 cm<sup>3</sup> each) viewed by ~250 multi-anode photomultipliers is capable for precisely measuring particles produced by various interactions of the primary cosmic rays with the atmospheric nuclei. The detector forms about 130 vertical layers of scintillator strips which are aligned in X or Y direction in each layer alternatively. In order to keep the dead time due to the muon measurement as small as possible, we plan to trigger the muon detection with the 4-fold coincidence between 4 layers forming the top and bottom X-Y pairs and identify the muon incident direction from X-Y positions in the top and bottom pairs. In this paper, we evaluate the performance of this new muon detector based on the preliminary experiment carried out with a small proto-type detector at Sierra Negra. We also demonstrate performances of this new detector in observing the space weather as an important component of the GMDN.

キーワード: 汎世界的ミュオン計ネットワーク, 宇宙天気, 銀河宇宙線

Keywords: global muon detector network, space weather, galactic cosmic rays