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Status of the LHCf experiment

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Abstract content

The uncertainty of hadron interaction models of Monte Carlo simulations have caused some systematic errors of energy reconstruction and the determination of composition in ultra high energy cosmic ray measurements. The uncertainty is due to the lack of the experimental data on the nuclear interactions in the energy region over 2x10^14eV. The LHCf experiment will provide crucial calibration points at 10^17eV that are indispensable for the hadron interaction models in the ultra-high energy region. The production spectra of photons and neutral pion will be measured in the very forward region of a LHC interaction point. The first data will be taken during beam commissioning of the LHC with 450GeV+450GeV proton-proton collisions, which is scheduled to start at the end of 2007. The final data set will be taken with 7TeV+7TeV collisions, corresponding to 10^17eV cosmic ray collisions in the "laboratory frame". LHC is scheduled to start 7TeV+7TeV collisions in the Spring of 2008. In the meantime the preparation of the LHCf experiment is on going. The Arm#1 detector was fully assembled in July 2006. The Arm#2 detector will be finally assembled in April 2007. In this talk, we will present a progress report of the LHCf experiment.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 1097-1100

Primary author(s) : Mr. MENJO, Hiroaki (Nagoya University, Japan)

Co-author(s) : ADRIANI, Oscar (INFN Firenze, Univ. di Firenze, Italy); MACINA, Daniela (CERN, Switzerland); MASE, Tsuyoshi (Nagoya University, Japan); MASUDA, Kimiaki (Nagoya University, Japan); MATSUBARA, Yutaka (Nagoya University, Japan); MATSUMOTO, Hidenori (Nagoya University, Japan); MURAKI, Yasushi (Nagoya University, Japan); PAPINI, P. (INFN Firenze, Univ. di Firenze, Italy); PERROT, Anne-Laure (CERN, Switzerland); SAKO, Takashi (Nagoya University, Japan); SHIMIZU, Yuki (Waseda University, Japan); BONECHI, Lorenzo (INFN Firenze, Univ. di Firenze, Italy); TAMURA, Tadahisa (Kanagawa University, Japan); TORII, Shoji (Waseda

University, Japan); TRICOMI, Alessia (INFN Catania, Univ. di Catania ,Italy); TURNER, Bill (LBNL, Berkeley, USA); VELASCO, J. (IFIC, Centro Mixto CSIC-UVEG, Spain); WATANABE, Hironori (Nagoya University, Japan); YOSHIDA, Kenji (Shibaura Institute of Technology, Japan); BONGI, M. (INFN Firenze, Univ. di Firenze, Italy); CASTELLINI, Guido (IFAC-CNR, Italy); D'ALESSANDRO, Raffaello (INFN Firenze, Univ. di Firenze, Italy); FAUS, D.A. (IFIC, Centro Mixto CSIC-UVEG, Spain); HAGUENAUER, Maurice (Ecole-Polytechnique, France); ITOW, Yoshitaka (Nagoya University, Japan); KASAHARA, Katsuaki (Shibaura Institute of Technology, Japan)

Presenter(s) : Mr. MENJO, Hiroaki (Nagoya University, Japan)

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