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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 $2 \times 10^{14} \text{eV}$. The LHCf experiment will provide crucial calibration points at 10^{17}eV 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 $450 \text{GeV} + 450 \text{GeV}$ proton-proton collisions, which is scheduled to start at the end of 2007. The final data set will be taken with $7 \text{TeV} + 7 \text{TeV}$ collisions, corresponding to 10^{17}eV cosmic ray collisions in the "laboratory frame". LHC is scheduled to start $7 \text{TeV} + 7 \text{TeV}$ 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

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