



Laboratório de Instrumentação e  
Física Experimental de Partículas

## Seminário LIP\*

Thursday, 28 September 2017

11:30 to 12:30

### ***Observation of a Large-scale Anisotropy in the Arrival Directions of Cosmic Rays above $8E18$ eV***

**By Lorenzo Cazón  
(LIP)**

Cosmic rays are atomic nuclei arriving from outer space that reach the highest energies observed in nature. Clues to their origin come from studying the distribution of their arrival directions. Using  $3E4$  cosmic rays above  $8E18$  eV recorded with the Pierre Auger Observatory, from a total exposure of  $76,800 \text{ km}^2 \text{ sr yr}$ , we report an anisotropy in the arrival directions. The anisotropy, detected at more than the  $5.2\sigma$  level of significance, can be described by a dipole with an amplitude of  $6.5$  ! towards right ascension  $\alpha=100\pm 10^\circ$  and declination  $\delta=-24\pm 13^\circ$ . That direction indicates an extragalactic origin for these ultra-high energy particles.

\* Place: Seminar Room (311)

LIP (Laboratório de Instrumentação e Física Experimental de Partículas)

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Coffe and cakes at 11:00 in room 312