Contribution ID: **124** Type: **Presentazione orale**

Simulation production and data storage at the Pierre Auger Observatory

Monday, 22 May 2023 17:00 (20 minutes)

The Pierre Auger Observatory, located in the Argentinian Pampa, is the largest facility in the world to study Ultra-high-energy cosmic rays (UHECRs). At the Auger energies, indirect cosmic-ray measurements are performed exploiting the extended air showers (EASs) induced by UHECRs in the atmosphere. Monte Carlo simulations of EASs and the detector response they cause are essential for the determination of cosmic-ray nature, energy and direction and for the optimization of the new detectors and electronics, part of AugerPrime, the major upgrade of the Auger surface detector array. The CORSIKA Monte Carlo code is used to simulate EASs, while the Offline, an internal Auger software, is used to simulate the detector response and reconstruct data. For many years, simulations has been produced in local clusters using PBS and HTCondor. Now the bulk of the shower simulations is produced on the grid via the virtual organization auger using the dirac middleware. The job submission is made via python scripts using the DIRAC-API. For data redundancy, simulations are stored on the Lyon server and the grid Disk Pool Manager. Auger members can access them via iRODS and DIRAC, respectively. Software is distributed using the CERN VM File System.

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Session Classification: Esperimenti e calcolo teorico

Track Classification: Esperimenti e Calcolo Teorico