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Simulation and reconstruction of cosmic ray showers for the Pierre Auger Observatory on the EGEE grid

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Content :

The Pierre Auger Observatory studies ultra-high energy cosmic rays. Interactions of these particles with the nuclei of air gases at energies many orders of magnitude above the current accelerator capabilities induce unprecedented extensive air showers in the atmosphere. Different interaction models are used to describe the first interactions in such showers and their predictions are confronted with measured shower characteristics.

We created libraries of cosmic ray showers with more than 35 000 simulated events using CORSIKA with EPOS or QGSjetII models. These showers are reused several times for simulation of detector response at different position within the detector array. We describe our experience with installation of the specific software on the grid and running large amount of jobs on sites supporting the VO auger with dedicated and also opportunistic resources. A web based dashboard for summary of job states was developed together with a custom database of available files with simulated and reconstructed showers.

Presentation type :

oral

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