Method to Deduce the UHECR Energy Spectrum by the Pierre Auger Observatory

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Taking into account the great advantage of having a hybrid detector a method has been developed – simulation independent – to determine the energy of the cosmic rays recorded by the surface detector of the Pierre Auger Observatory. The method is based on the isotropy of the cosmic ray flux, with respect to the zenith angle for all energies of interest. It enables to relate the calorimetric measurement of the cosmic ray energy recorded by the fluorescence detector with a surface detector specific quantity, e.g. shower size at 1000 m distance from the core, corrected for the attenuation in the atmosphere. The method of measuring and calibrating the primary energy and the influence of the reconstruction uncertainties on the energy spectrum are presented.