

Contracts Final Presentation 19-20 Feb. 2004

1. Title of the presentation

Magnetocosmics and Atmocosmics: Geant4 applications for simulating the propagation of cosmic rays through the Earth's magnetosphere and atmosphere

2. Speaker

Laurent Desorgher

3. Abstract

In the frame of the Space Energetic Particle Transport and Interaction Modelling for ESA Science Studies (SEPTIMESS) project we have developed two codes based on the Monte Carlo Geant4 toolkit that simulate the propagation of cosmic rays through the Earth magnetosphere and atmosphere. The first code called Magnetocosmics integrates and visualises charged particles trajectories in advanced magnetospheric magnetic field models, and computes cutoff rigidities for user defined observing positions, times, and directions.

The second code called Atmocosmics simulates the propagation of cosmic ray particles through different models of the Earth's atmosphere. It computes the flux of secondaries at user defined altitudes and/or depth. Energy deposited in function of depth and/or altitude is also computed. We will present both codes and some simulation results.