# Space Science Seminar
# Tuesday, 2020 February 25
# 10:30 a.m.
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## Simulation of the Cosmic Radiation Transport for Aeronautical Applications

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Host: Mark Christl

Modeling cosmic-ray-induced particle fluxes in the atmosphere is very important for developing many applications in aeronautics, space weather, and ground-based experiments. There is a lack of measurements and modeling at flight altitude and at ground level in the South Atlantic Magnetic Anomaly. It will be presented an application based on the Geant4 toolkit called gPartAt that is aimed at the analysis of extensive air shower particles spectra and angular distribution considering the Earth's magnetic field. Another application has been developed using the MCNPX code with the same approach in order to evaluate the models and nuclear data libraries used in each application. Moreover, measurements were performed to determine the ambient dose equivalent rate of neutrons at flight altitude in different regions and dates in the Brazilian airspace; these results were also compared with the simulations. The results from simulations of the neutron spectra at ground level were also compared to data from a neutron spectrometer in operation since February 2015 at the Pico dos Dias Observatory in Brazil, at 1864 m above sea level. Further applications developed using the gPartAt will also be presented.

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