Background simulation of the HITOMI/SXS instrument: preliminary results

The HITOMI/SXS instrument, despite its short life, provided more than 300 ks of Non X-ray Background (NXB) data and a unique opportunity for validating the simulation of an X-ray micro-calorimeter background against in-flight real data. While HITOMI was flown in low Earth orbit (LEO), hence we expect a different composition for the background source population, the ability to reproduce the NXB spectra detected by the anti-coincidence and calorimeter instruments would confirm the physics reliability of the Geant4 ATHENA simulation and that, in the specific, the X-IFU background evaluation is not missing any unexpected background component affecting X-ray micro-calorimeters. All future X-ray missions (e.g. XARM) will certainly benefit from the validation of Geant4 physics libraries. Since the particle fluxes in LEO depend on the geomagnetic cut-off rigidity (COR), which changes along the 31 deg. inclination HITOMI orbit, the in-flight NXB data are selected for observation in the equatorial, COR > 12, region. We present here the space radiation environment modeling, resulting Geant4 simulated anti-coincidence and SXS spectra, and the preliminary comparison with observations.