R010-P07
ポスター 3 ：9/26　AM1/AM2 （9:00-12:30）

地球磁気圏軟 X 線発光モデリングに対するダイポールモーメントの傾きによる影響

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Dipole Tilt Effects on Modeling of Soft X-ray Imaging of the Earth's Magnetosphere

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The charge exchange between high charge-state ions in the solar wind and the Earth's exosphere (geocorona) emits soft X-rays. This emission process, termed SWCX (Solar Wind Charge eXchange), is useful for visualizing the dayside magnetosphere and its response to solar wind variations. The SMILE and GEO-X missions have been proposed to provide soft X-ray images of the magnetosheath and cusps and will contribute to a better understanding of the dynamic response of the Earth's magnetosphere.

For this purpose, we have developed a global magnetohydrodynamic simulation model of the magnetosphere (Matsumoto and Miyoshi, 2022). The model can provide three-dimensional distributions of the soft X-ray intensity from the plasma parameters. Then line-of-sight integrations of the intensity distribution give a two-dimensional X-ray map as a virtual observation in the simulation domain. In this model, however, the magnetic dipole axis is aligned to the z-axis of the computational domain. To run simulations under more realistic conditions, we introduce the dipole tilt. This inclination leads to the position change of the bright emission regions: cusps and magnetic reconnection sites. In this presentation, we report the status of the model development and discuss the dipole tilt effects on the intensity and distribution of 2D X-ray maps seen from a high-latitude spacecraft orbit at solstice during northern summer. The inclusion of the dipole tilt into the numerical model will contribute to more accurate predictions and physical understandings for the imaging missions.