

かぐやによる単一および両伝搬モードのオーロラキロメートル波の観測

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Single and both propagation modes of auroral kilometric radiation (AKR) observed by KAGUYA

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In the KAGUYA (SELENE) LRS instrument [1], WFC-H [2] observes wave spectra in 1kHz-1,000kHz and various plasma waves like Auroral Kilometric Radiation (AKR), electron plasma waves, and broadband electrostatic waves have been observed. This system can observe wave polarizations by two pairs of dipole antennas. We have analyzed the AKR polarizations.

The propagation mode of AKR has become possible from the polarization measurement of WFC-H using lunar occultations [3]. This method is applied to other examples. For examples, the propagation mode can be decided since the source hemisphere can be decided clearly, both polarizations are observed while both hemispheres can be seen, and the other mode is observed after an occultation. Their propagation modes can be estimated based on their source hemispheres. The results will be compared with ray tracing studies.

References

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月周回衛星「かぐや (SELENE)」搭載 LRS[1] の WFC-H 波動観測装置 [2] では、1-1,000kHz の波動のスペクトルを観測でき、オーロラキロメートル波 (AKR)、電子プラズマ波、広帯域静電波などが観測され、周辺プラズマ環境のモニターにもなっている。本装置は二対のダイポールアンテナを用いた偏波観測が可能であり、AKR の偏波解析を行ってきた。

AKR の偏波観測に月による掩蔽を用いて、プラズマ波動で言う磁場方向に対する偏波の同定が可能となった [3]。この手法を他の例にも広げていく。例えば、単一の伝搬モードが、掩蔽で源半球が識別できる例や、両半球可視時に両偏波が受かった例、掩蔽後に別のモードが見えた例。これらの源半球の決定しそれに基づく伝搬モードを推定する。レイトレーシングとの比較による検討も行う。

References

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