

Observations of Polarization of Auroral Kilometric Radiation by KAGUYA and its Lunar Occultations

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In KAGUYA (SELENE) LRS[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.

Kaguya moves behind the Moon every rotation. The occultations of AKR radiated from the Earth occur. Such occultation observation by the 32 channel burst receiver of lunar orbiter RAE2 was reported in [3,4]. The polarizations were not measured then. The polarization of AKR is defined with respect to the magnetic field from a view point of plasma waves. On the other hand, the polarization is observed with respect to the propagation direction. Both polarizations depend on the source hemisphere. When only one hemisphere can be seen due to the occultation, the source hemisphere is identified and the polarization can be measured correctly. This result is also useful when both hemispheres are seen after the occultation. We show the results and their interpretations.

References

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