

## Broadband whistler-mode waves detected by Kaguya near the lunar crustal magnetic anomalies

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Broadband magnetic waves with frequency range of 0.03-10 Hz in the spacecraft frame were observed by Kaguya near the Moon [Nakagawa et al., 2011]. The waves were not propagating parallel to the ambient magnetic field direction and had a compressional component. There was neither peak frequency nor preferred polarization. Nakagawa et al. [2011] identified them as whistler-mode waves because of their large group velocity compared with the solar wind velocity as well as the observed frequency range. Although the generation mechanisms of the waves were suggested to be associated with ions reflected by the Moon, precise process has not been clarified yet.

Recently we have revealed the statistical properties of narrowband whistler-mode waves near the Moon [Tsugawa et al., 2011]. There would be a link in the generation mechanism of narrowband and broadband whistler-mode waves. In the present study, we perform statistical analyses to reveal the properties of the broadband whistler-mode waves near the Moon. The results reveal that the waves are mostly observed just near the lunar crustal magnetic anomalies in dayside. It suggests that most of the waves are generated by the solar wind interaction with the magnetic anomalies. Furthermore, we investigate the velocity distributions and fluxes of reflected ions by the magnetic anomalies and lunar surface. We also discuss other possible generation mechanisms of the waves based on the measured plasma parameters around the Moon.

Keywords: magnetic anomaly, reflected ions, upstream whistler waves