

Development of a dual frequency receiver system for the Jovian Synchrotron Radiation using the Iitate Planetary Radio Telescope

Kota Imai[1]; Hiroaki Misawa[2]; Fuminori Tsuchiya[1]; Akira Morioka[3]; Takuo Watanabe[4]; Riichi Kudo[5]

[1] Planet. Plasma Atmos. Res. Cent., Tohoku Univ.; [2] PPARC, Tohoku Univ.; [3] Planet. Plasma and Atmos. Res. Cent., Tohoku Univ.; [4] meisei electric co.,ltd; [5] NTT

We have made regular observations of the Jovian Synchrotron Radiation (JSR) with the Iitate Planetary Radio Telescope (IPRT) at 325MHz since 2003. As a further project of IPRT, we have developed a new dual frequency receiver system which enables simultaneous JSR observations at both 325MHz and a new frequency of 785MHz. JSR is generated by relativistic electrons trapped in the Jovian radiation belt. We can obtain more information of the Jovian radiation belt from the dual frequency observations; i.e., dynamical processes of particle acceleration / heating for approximately 12MeV electrons in addition to approximately 7MeV electrons from the 785MHz and 325MHz observations, respectively. The new receiver system has individual front-end systems for both frequencies consisting of dipole-type feed systems, low noise amplifiers, frequency conversion sections, and a common back-end system. Development of the new 785MHz receiver system has been almost finished and the first light for JSR was obtained in this winter. We will show current status of the new system with objectives of this project in the presentation.