

Development of dual frequency receiver system at the Iitate Planetary Radio Telescope (IPRT)

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

[1] Planet. Plasma Atmos. Res. Cent., Tohoku Univ.; [2] PPARC, Tohoku Univ.; [3] Planet. Plasma and Atmos. Res. Cent., Tohoku Univ.; [4] Planet. Plasma and Atmos. Res. Cent., Tohoku Univ.

We have made regular observations of the Jovian synchrotron radiation (JSR) with the Iitate Planetary Radio Telescope (IPRT) at 325MHz since 2003 at the Iitate village in Fukushima Prefecture, Japan. As a further stage project of IPRT, we have developed a new dual frequency receiver system which enable simultaneous JSR observations at 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 at 785MHz in addition to approximately 7MeV electrons at 325MHz. The new receiver system has individual front-end systems for both frequencies consisting of Yagi-type feed systems, low noise amplifiers, band-pass filters, and mixers for frequency conversion, and a common back-end system. At the present stage, development of the feed system and front-end for 785MHz has been almost finished and a performance test for the new system is just made by receiving radio flux calibration stars. We will show performance of the new system with outline and objectives of this project in the presentation.