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# Two-element radio interferometer for the observation of Jupiter's synchrotron radiation (II)

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Synchrotron radiation from Jupiter's radiation belt and its time variation show us the presence of efficient acceleration and transport of relativistic electrons in the Jovian inner magnetosphere. Recent ground based observation of Jupiter's synchrotron radiations (JSR) showed that the total flux density of them significantly enhanced at the onset of substorm-like event in the Jovian magnetosphere (Nomura et al. 2007). We proposed that two-element radio interferometer with a baseline length of a few kilometers enabled us to find the spatial characteristic of JSR during the enhanced event. In this paper, we will show results about feasibility to detect the enhanced event with two-element radio interferometer and the current status of the development of the interferometer.

We have already showed that the two element interferometer could detect the expected change in the visibility phase associated with the change in spatial distribution of JSR during the enhancement event for the case that the total flux density of JSR became 10 times greater than the usual intensity (5 Jy, Jy=$10^{-26}$ W $cm^{-2}$ $Hz^{-1}$). In this study, we also considered the weaker intensity cases (twice and 5 times) and test them. The results showed that spatial distribution changes for both cases were also detectable with the two-element interferometer.

We have started the development of a back-end receiver for the radio interferometer system. The back-end receivers consist of baseband down converter, GPS frequency standard, and high speed data sampler. The GPS frequency standard is used as a standard clock for the radio interferometer system, and K5/VSSP which is developed by the Kashima VLBI group of NICT is used as the data sampler. The allan variance of the GPS frequency standard was measured by using a hydrogen maser which was installed in the Mizusawa VLBI observatory (NAOJ). It is found that the inexpensive GPS frequency standard has a potential to detect the change in the visibility associated with the brightness distribution change during the enhanced event. The back-end receivers are planned to install in both the Iitate and Zao observatories in this spring and will be used for test radio interferometer observations at 327 MHz.