# A study on long-term variation of Jupiter’s synchrotron radiation associated with solar wind

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Jovian Radiation belt is a layer of energetic particles (˜few tens MeV). Jupiter’s synchrotron radiation (JSR) observation is a main tool for determining physical process therein, and various diffusion models have been proposed to account for the observed JSR’s short-term and long-term variations observed in the past. As for the long-term variation, where the total JSR flux density varies by 20-30% over a few years, it is known to be well correlated with solar wind ram pressure [Bolton et al. 1989] with lag time of 2 years, but its reason still remains unknown.

Amid the situation, Extreme ultraviolet spectroscope HISAKI has found evidence of electric field inside the magnetosphere-large-scale convection electric field associated the solar wind [Murakami et al. 2016], from which one can expect enhanced radial diffusion inside the magnetosphere.

In this study, I show the result of my numerical calculation on radial diffusion driven by the estimated convection electric field and synchrotron radiation variation resulted therefrom and suggest that the long term variation with 2 years lag time can possibly explained by solar-wind-driven convection electric field.