Relationship between ground Pc5 pulsations and relativistic electron flux at the geosynchronous orbit

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Relativistic electrons at the geosynchronous orbit are thought to be a cause of the satellite charging, so that prediction of variations of the electron flux is one of the most important objectives of the space weather study. On the other hand, Pc5 pulsations come up in a prevalent candidate of an acceleration mechanism of the relativistic electrons. We use the relativistic electron flux data obtained by DRTS satellite and magnetic variations data from five ground stations in the latitudinal range from the auroral to equatorial latitudes. The result of the cross correlation analysis shows that the electron flux at the geosynchronous orbit increases with increasing of the Pc5 power with the time delay of two days. In addition, we analyze the H/D power ratio of the Pc5 pulsation observed at CCS which is the footpoint of the magnetic field line running through DRTS satellite. As a result, it is found that the H-component Pc5 power become predominant after passages of the stream interface of the Corotating Interaction Regions (CIRs). The result of the analysis indicates that the toroidal oscillations of the magnetic field lines at the position of DRTS satellite are generated during the passages of the CIRs. We think that this result could be explained by the drift resonance acceleration model proposed by Elikington et al. (1999).