

## Simultaneous excitation of Pi 2 and Pc 5 pulsations driven by solar wind density pulses during a magnetic cloud

# Tohru Sakurai[1]

[1] Dept. of Aeronautics and Astronautics, School of Engineering, Tokai University

A very interesting simultaneous excitation phenomenon of Pi 2 and Pc 5 magnetic pulsations in the magnetosphere is examined on a basis of the ground and magnetosphere magnetic records when an extremely large solar wind density pulse hit the magnetosphere during the strong northward interplanetary magnetic field of a magnetic cloud on November 8, 2000. It was observed in association with simultaneous appearance of plasma convection flows in the midnight and morning side high latitude ionosphere, respectively. The observation suggests that the generation of these phenomena in the magnetosphere is directly driven by impact of the solar wind density pulses. This is further supported by the observation that a dominant oscillation frequency of the Pi 2 and Pc 5 pulsation was the same with about 1.6 mHz (10 min), which was almost similar to that observed in the solar wind plasma density and magnetic field oscillation. The oscillation was observed over an extended region from high to low latitudes on the ground, and at the geosynchronous orbit in the magnetosphere, suggesting a global oscillation. The solar wind density pulse triggered a substorm onset, which was identified with a sudden brightening of an aurora luminosity and a magnetic pulsation at midnight. While the Pc 5 pulsation appeared clearly in the morning sector accompanied another high frequency Pc 5 oscillation appeared only in the auroral latitudes. Therefore, this event is very interesting since Pi 2 and Pc 5 oscillations were simultaneously observed with a similar oscillation frequency, although they were observed at the different magnetic local time in the magnetosphere and on the ground.