

## Pi pulsations at substorm onset site

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We report irregular geomagnetic pulsations at substorm onset site using  $dH/dt$  observations at conjugate stations. The pulsations around substorm onset are tentatively classified into 5 types; pre-onset DC-ULF, pre-onset Pi 2, Pi 1B, onset Pi 2, and post-onset Pi 2. The characteristics of these Pis and their relationship with field aligned currents and plasma instability at substorm are discussed in relation to two step evolution of substorm onset.