

Periodic Ion Flux Modulation observed by Van Allen Probes in Ring Current Region

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In the drift-bounce resonance that was theoretically introduced by *Southwood et al.* [1969], the interaction is expected between ULF waves and electrons or ions. Through the interaction, charged particles in the ring current can be accelerated or decelerated and the population of ring current particles can be changed. There are many observations of drift-bounce resonance for protons [e.g., *Kokubun et al.*, 1977; *Takahashi et al.*, 1990; *Dai et al.*, 2013], whereas only a few observations of drift-bounce resonance are reported for O^+ ions [*Yang et al.*, 2010, 2011]. In this study, we report several events of periodic flux modulation of protons and O^+ ions observed by Van Allen Probes in 2012-2016. We find periodic flux modulation of O^+ ions and Pc5 waves on November 4, 2015 (event A) and November 30, 2015 (event B). In event A, the flux modulation is recognized at 1-50 keV and dispersed in energy. In event B, however, the flux modulation is limited at ~ 10 keV. We will examine dependence of the flux variations on pitch angles and energies, and discuss if the variations are due to drift-bounce resonance.

Keywords: wave-particle interaction, drift-bounce resonance, geomagnetic pulsations, oxygen ions, ring current, Van Allen Probes

