

## **SESSION: Solar Wind, Magnetosphere, Ionosphere I**

Thu, Feb 21, 09:45-10:00

### **Analysis of field line resonance flows, field-aligned currents, and FLR aurora with SuperDARN, REGO, and Swarm**

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Ionospheric observations of the two-dimensional velocities and field-aligned currents of field line resonances will be presented. Knowledge of the two-dimensional plasma flows is essential for determining the field-aligned current structure of the field line resonance and for understanding the role that field line resonances play in the generation of some auroral arc forms. In this work the ionospheric convection velocity vectors are determined from a high resolution fit to the Super Dual Auroral Radar Network (SuperDARN) line-of-sight data. Bandpass filtering the north-south and east-west components of the total convection velocity vectors reveals the two dimensional velocity field specific to an individual field line resonance. The field-aligned currents are estimated using the divergence of the wave electric field and a constant height-integrated ionospheric Pedersen conductance. The field line resonance velocities are found to exhibit periodic vorticity which correspond to periodic poleward moving bands of enhanced field-aligned current. The field-aligned currents alternate between upward and downward directed and peak in magnitude  $\sim 0.5-1$  degrees poleward and/or equatorward of the peak in field line resonance flow velocity. Conjunctions between SuperDARN FLR events, REGO FLR aurora and Swarm satellite measurements of field-aligned currents will be presented.