

# SEMINAR NOTICE

*Department of Physics and Engineering Physics  
University of Saskatchewan*

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**SPEAKER:** Dr. Kathryn McWilliams,  
Institute of Space and Atmospheric Studies  
Physics & Engineering Physics

**TOPIC:** *Geomagnetic Field-Aligned Currents:  
Using Radars on the Ground to Estimate Currents  
Flowing Into and Out of the Earth's Ionosphere*

**DATE:** October 23rd , 2018

**TIME:** 3:30-4:30 p.m.

**PLACE:** Physics 103

## **ABSTRACT:**

The Earth is shielded from the solar wind by its magnetic field. This shape of this magnetic field "bubble," known as the magnetosphere, is supported by vast electrical current systems in space. The Earth's magnetosphere is coupled to the Earth's ionosphere (the electrically charged layer of the Earth's upper atmosphere) via currents that flow along the field lines. These are known as field-aligned currents, or FACs. Using ionospheric electric field data from the SuperDARN radars, we can estimate that FACs. FAC estimates have also been calculated from magnetic field deflections recorded by the scientific satellite mission called AMPERE that uses data from the Iridium satellite constellation. A comparison between AMPERE and SuperDARN FAC estimates will be presented for a type of event known as a geomagnetic substorm. A substorm produces the brilliant auroral displays that we can see near Saskatoon. We will look at the spatial and temporal changes of FACs around the onset of the substorm using SuperDARN and AMPERE data.

*Coffee and Cookies will be served in Physics lounge at 3:00 p.m. for those attending the seminar.*