Title:	**Practical Radar Polarimetry: Theory and Applications 2 Day Workshop**
Location:	**Carleton University** **1125 Colonel By Drive** **Loeb Building, Room A200** **Ottawa, Ontario K1S 5B6**
Date:	**Tuesday, August 28 & Wednesday, August 29, 2007**
Price:	**$100 CAD (includes lunch)**

Workshop Description & Objective:

With the pending launch of RADARSAT-2, routine, world-wide access to quad-polarized SAR will become a reality. RADARSAT-2 data will provide continuity for current RADARSAT-1 applications, but also provide the opportunity to exploit the rich information content of quad-polarized data to enhance current operational applications.

The objective of the workshop is to provide a point-of-entry for the user who is familiar with single channel radar data and applications, but is interested in polarimetric radar theory, analysis, and applications. The workshop will present radar polarimetry from a practical perspective, and allow the user to work from single-channel SAR to quad-polarized SAR. The approach is to build on fundamental radar principles, and to then add the various levels of polarimetric information. The workshop will provide an in-depth discussion of wave and scattering polarimetry, and target decomposition techniques. In addition, a discussion surrounding the advanced features inherent within the RADARSAT-2 sensor, focused on radar polarimetry specifically will be discussed in detail

The workshop integrates theory with hands-on computer-based demonstrations. The objective of the demonstrations is to provide experience with the manipulation of quad-polarized data, and to augment the topics presented in the theory. The demonstrations also provide exposure to the various quad-polarized data analysis and visualization algorithms that are available.

To compliment the theory section, an overview of polarimetry applications will be presented. The applications will cover many areas including agriculture, defence and security, forestry, geology, hydrology, ice, and marine surveillance.

Workshop Topics:

1. Introduction
   a. polarimetry concepts
   b. airborne systems
   c. spaceborne systems

2. RADARSAT-2
   a. mission overview
   b. polarimetric capability
   c. polarimetric products

3. Wave and Scattering Polarimetry
   a. characterizing the polarization state of the transmitted wave
   b. review of scattering mechanisms that produce a change of the transmitted polarization state
   c. characterization of the polarization state of the scattered wave
   d. visualization of polarimetric data
   e. computer-based exercises (SPW demo)

4. Target Decomposition
   a. coherent target decomposition and examples
   b. incoherent target decomposition and examples
   c. unsupervised classification of polarimetric data
   d. computer-based exercises (SPW demo)

5. Polarimetric Analysis
   a. outline a sequence of steps to demonstrate how the information content changes as polarimetric data channels are added
   b. computer-based exercises

6. Polarimetric Applications
   a. land applications
   b. marine applications
   c. case study: ship-iceberg discrimination using polarimetric data
   d. other application-specific presentations

7. Student Exercises Using SPW
   a. Exercise on selected data sets

Target Audience:

- People working with SAR data who have an interest in polarimetry
- Although the workshop will include a brief introduction to SAR, knowledge of SAR and SAR applications will be assumed