
Fall 2009 IMCS Special Seminars

Date Speaker/Affiliation Seminar Title
Location

Time

September 30, 2009

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University of Utah

Climate Change and the Mathematics of Transport in Sea Ice

Sea ice is both an indicator and agent of climate change. It also hosts extensive algal and bacterial communities which sustain life in the polar oceans. The dramatic decline of the summer Arctic ice pack is perhaps the most visible, large scale change on Earth's

surface in recent years. Most global climate models, however, have underestimated this decline, while the Antarctic sea ice pack has seen regional increases. We will discuss some key sea ice processes which must be better represented in climate models to improve projections. In particular, fluid flow through the porous microstructure of sea ice mediates a broad range of processes such as the growth and decay of seasonal ice, the evolution of summer ice albedo, and biomass build-up. We'll focus on recent mathematical advances in understanding the fluid permeability of sea ice, and the thermal evolution of its microstructure. We'll also discuss related results on the electromagnetic properties of sea ice which determine its response in remote sensing applications. Our work will help in predicting how global warming may affect sea ice, how polar ecosystems may respond, and in monitoring ice thickness and changes in the polar marine environment.

Video from a 2007 Antarctic expedition where we measured fluid and electrical transport in sea ice will be shown.

Environmental & Natural Resource Sciences Bldg.

Room 123

3:45pm