

# SEMINAR NOTICE

*Department of Physics and Engineering Physics  
University of Saskatchewan*

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**SPEAKER:** Dr. Christopher Bidinosti, Department of Physics  
University of Winnipeg

**TOPIC:** *MRI: back to the future*

**DATE:** January 29th, 2019

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

**PLACE:** Physics 103

## **ABSTRACT:**

Since its invention in the early 1970s, magnetic resonance imaging (MRI) has become one of the most important imaging modalities in medicine. The method typically relies on Boltzmann polarization and Faraday detection to produce its signal. A consequence of this has been a very singular approach to innovation over the last 45 years: Build larger magnets with stronger fields to increase both the nuclear spin polarization and the subsequent spin precession frequency.

There is, however, a growing interest in low-field techniques that requires a closer look at the physics and practicalities of MRI performed in magnetic fields much lower than the 1.5 – 3 Tesla of common hospital scanners. In this regard, going forward is a bit like going back in time several decades when the use of more modest field strengths was the rule rather than the exception. While low-field MRI may be simpler to implement in many regards, there are in fact some rather long-forgotten challenges that have started to resurface again.

Following a review of general MR principles and conventional techniques, I will discuss some of the advantages and challenges of performing MRI in low magnetic field. I will also present some of my recent research on the low-field implementation of a made-in-Canada MRI method called TRansmit Array Spatial Endcoing (TRASE).

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