

## Canadian Association of Physicists

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## **Quantitative Magnetic Resonance Imaging**

Tuesday 4 June 2019 10:45 (30 minutes)

Magnetic resonance imaging (MRI) is well known as a flexible and powerful non-invasive diagnostic imaging technique available to clinical medicine. MRI as a largely qualitative tool is well established, principally used to visualize the internal structure of biological systems through mapping the spatial position of hydrogen. The magnetic resonance signal lifetimes (relaxation times) and molecular diffusion usually manifest qualitatively in the MR image contrast. Quantitative analysis of these parameters will reveal molecular scale information, since magnetic resonance is sensitive to a range of physical/chemical characteristics including molecular structure, molecular motion, size and interactions, through the measurements of relaxation times and molecular diffusion. The potential for quantitative MR has been recognized. However, significant methodological developments are still required for this potential to be fully realized. I will present some recent progress and potential solutions to this challenging problem.

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**Session Classification:** T2-8 Magnetic resonance imaging (DPMB) | Imagerie par résonance magnétique (DPMB)

**Track Classification:** Physics in Medicine and Biology / Physique en médecine et en biologie (DPMB-DPMB)