

# Nanoscale Organisation and Dynamics Group

University of Western Sydney



## Towards clinical implementation of MRI-based radiation therapy adaptive planning

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### Abstract

Radiotherapy dose planning for both pre-treatment planning and for adapting therapy during treatment are currently performed using CT or cone-beam CT scans. MRI is used only as an "add-on" modality for pre-treatment planning to assist with delineation of organ and target structures. This can introduce errors due to CT-MR registration and is inefficient in terms of health systems workflow. MRI based planning would have several advantages and can harness the power of functional imaging to improve radiotherapy targeting and treatment. This presentation will discuss requirements for clinical MRI radiotherapy planning systems and outline our collaborative work with CSIRO to develop atlas-based methods for electron-density mapping and autosegmentation for MRI planning.

### Profile

Associate Professor Peter Greer currently holds a full-time research position leading medical physics research at the Calvary Mater Newcastle Hospital and University of Newcastle. He graduated with a PhD in medical physics from the University of Adelaide in 2001. His work broadly aims to improve the treatment of cancer patients with radiation therapy and enable high quality effective treatments.

In 2005 Peter began a grant funded research career and has since received \$5M in research funding including NHMRC, Cancer Council NSW, Prostate Cancer Foundation Australia, and ARC grants. He has established a strong track record of translating research funding into successful outcomes. Several aspects of his research are currently being developed into commercial products for radiation oncology and medical imaging. He has received several awards including Early Career Researcher of the Year from the Hunter Medical Research Institute in 2011 - the premier award for early career medical research in the region. He has 50 publications in the last five years including several invited review articles. Peter served on a NHMRC grant review panel in 2011.

Staff and students at all levels are welcome to attend.

### Venue and Time:

This talk will be held on Friday May 31 at 11 am at the Campbelltown Campus in Building 21 Lecture Theatre (CA 21.G.03).

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