

Stuart George

ESR 4

Background

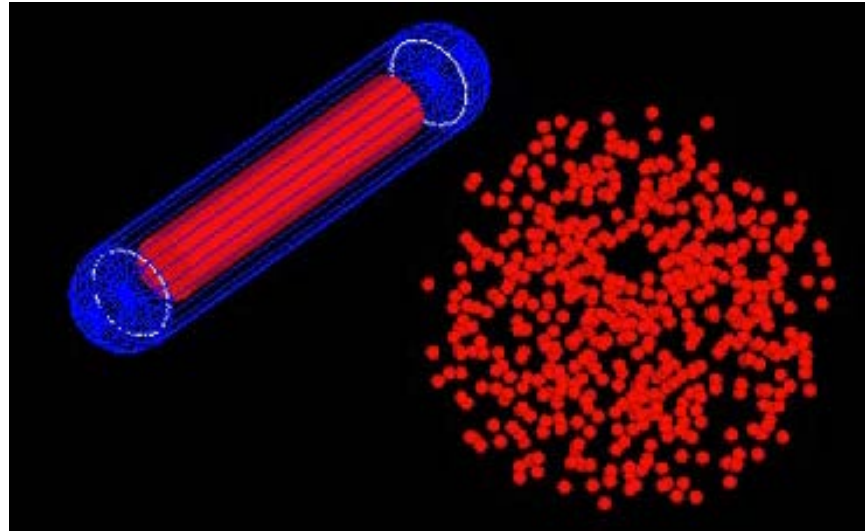
- ▶ I'm from the UK and 24
 - ▶ Lived in a fair few places now (UK, USA, Australia and now Switzerland!)
 - ▶ 4 Year Integrated Master in Physics, University of Sheffield, UK
 - ▶ Spent my third year on exchange at the University of Wollongong, Australia.
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Australia

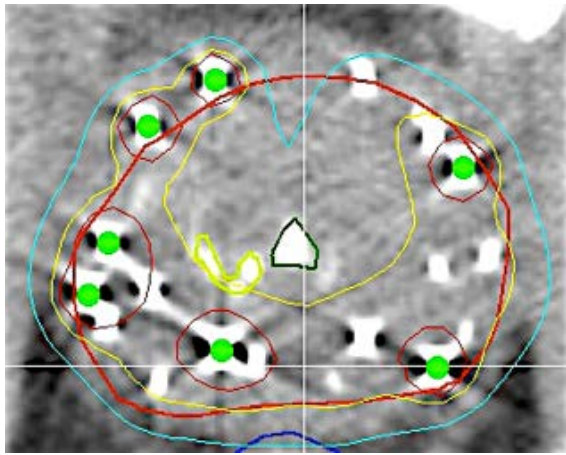


Brachytherapy Project

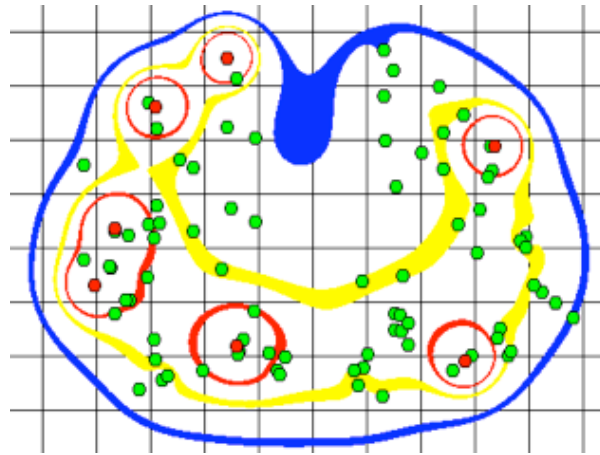
- ▶ Investigated the effect of calcifications in prostate brachytherapy using Geant4



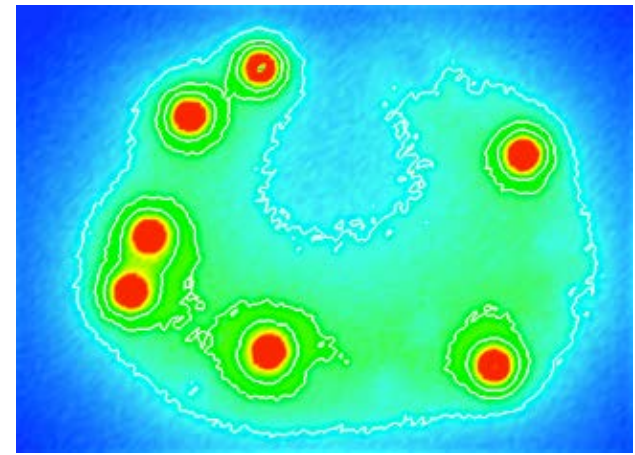
Whole Prostate Simulations



Post Implant
(St Georges CCC)

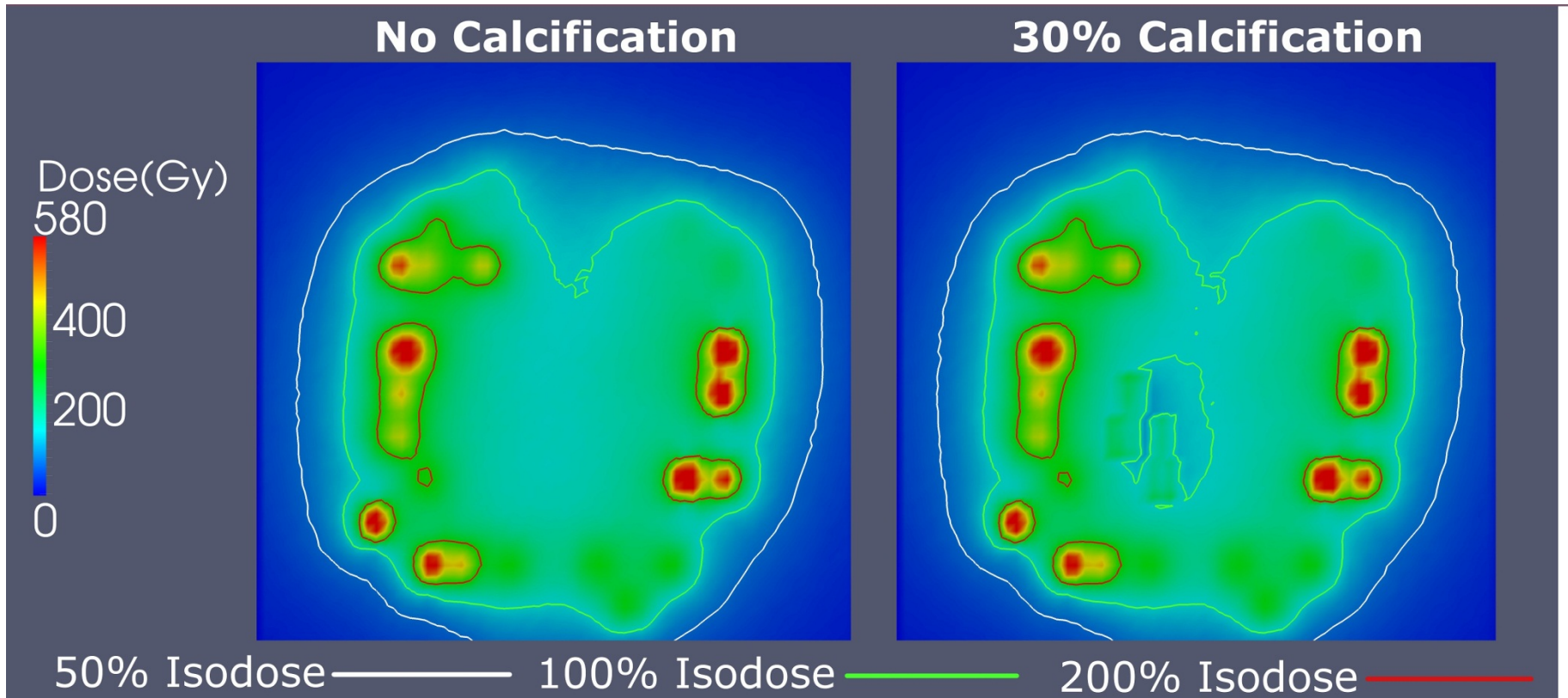


Tg43



Geant 4
(10^{10} Histories)

Results

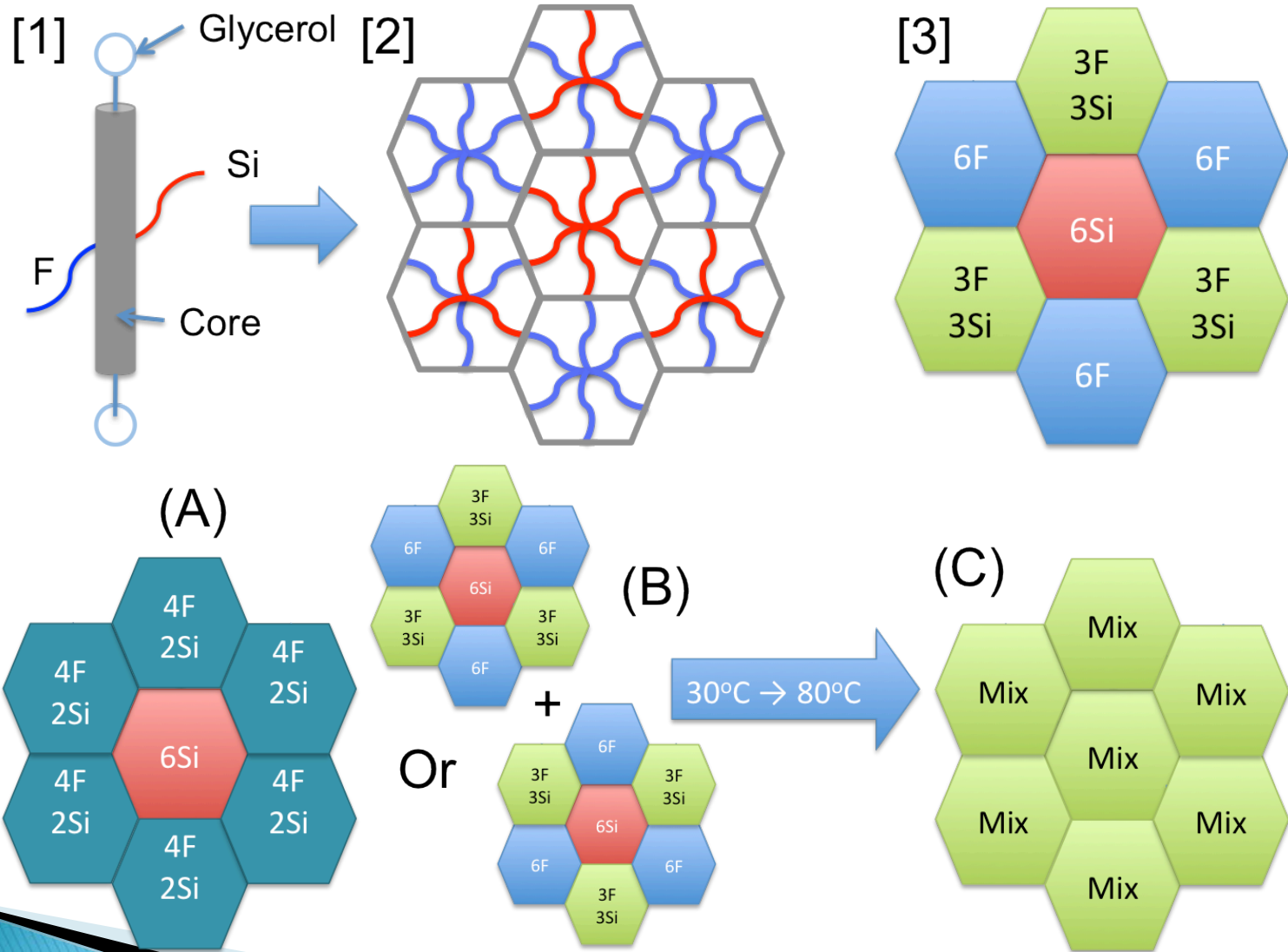


- ▶ Significant decrease in dose in small areas of the prostate, paper written up.

Sheffield

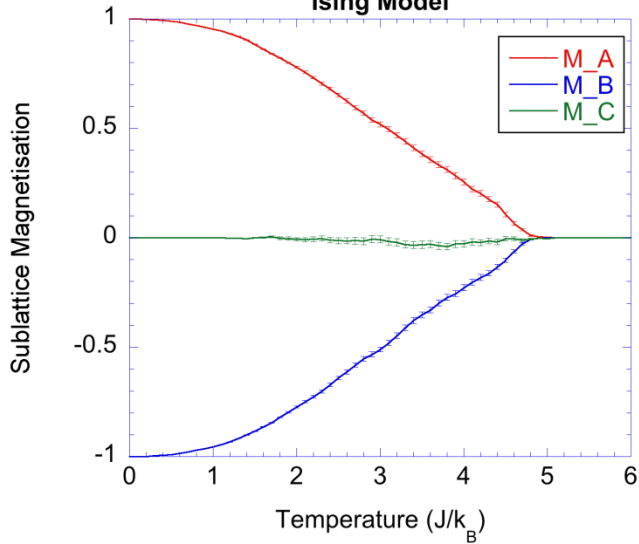


Liquid Crystal Phase Transitions

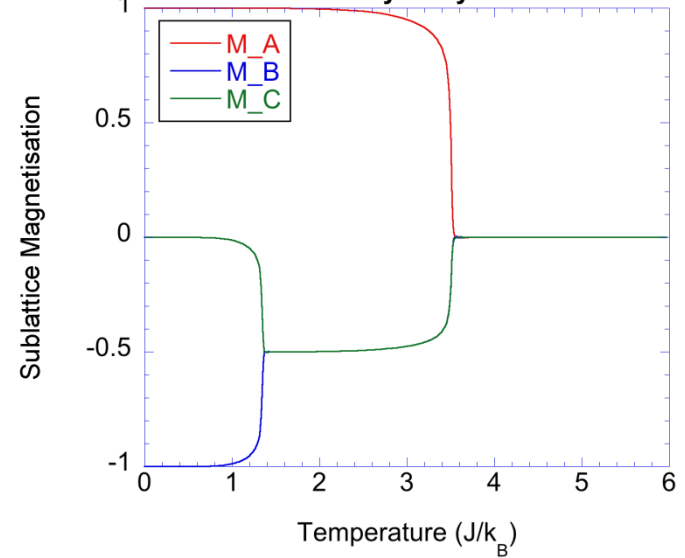


Results

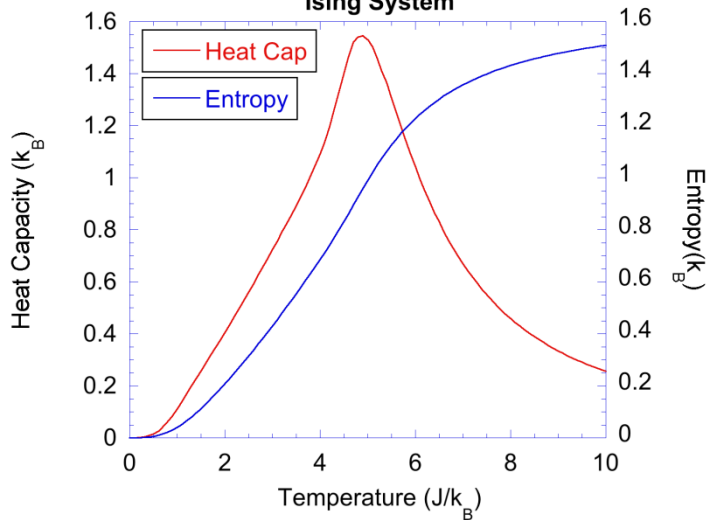
Sublattice Magnetisation Phase Diagram for the Spin 3 Ising Model



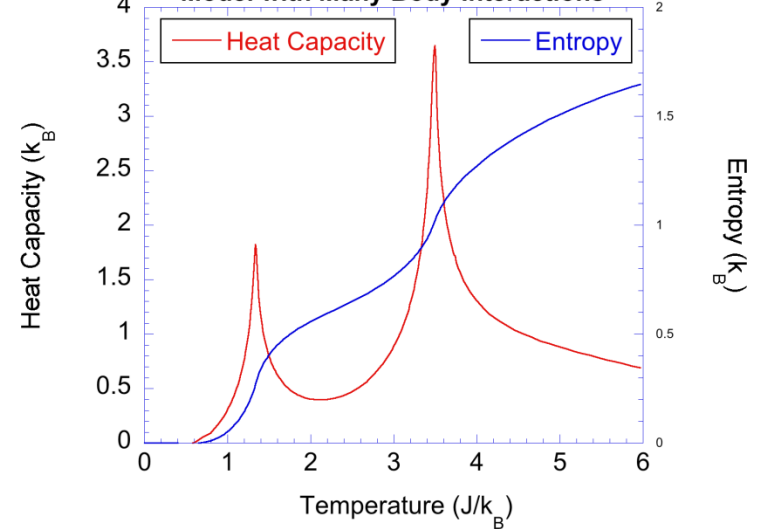
Sublattice Magnetisation Phase Diagram for the Rod Model with Many Body Interactions



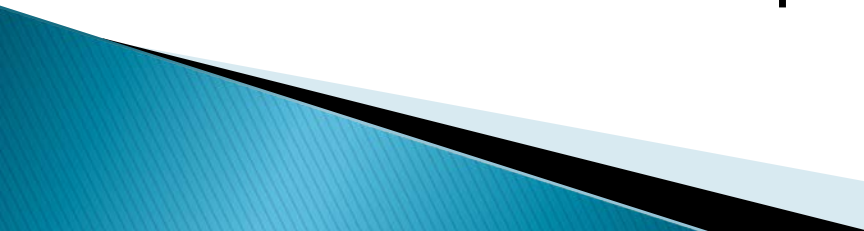
Heat Capacity and Entropy for the Spin 3 Ising System



Heat Capacity and Entropy for Sites A for the Rod Model with Many Body Interactions

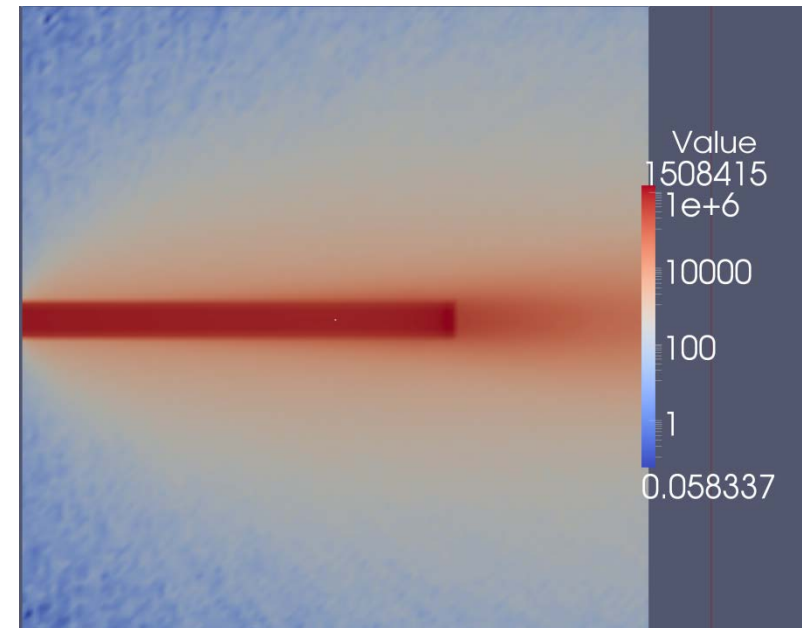
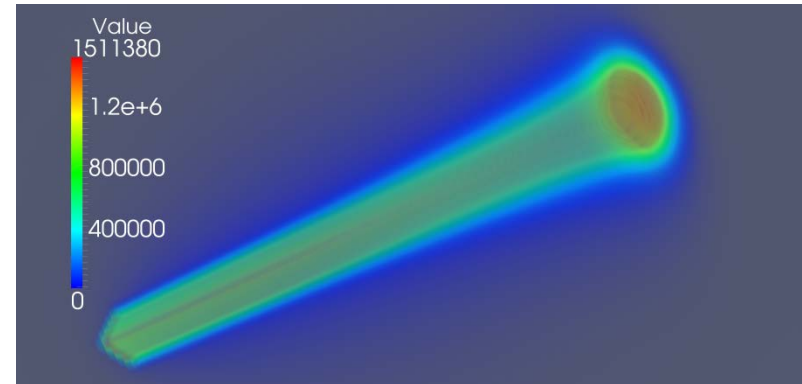


Current Work

- ▶ Medical applications of Medipix, Timepix and GEM detectors.
 - ▶ Including measuring ion fragments in ion therapy. Using these to try and reconstruct where the dose was delivered.
 - ▶ GEMPix
 - ▶ Neutron detection during conventional radiotherapy
 - ▶ Also a low level radioactive waste (^{57}Fe) characterisation project at CERN.
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Ion Fragments

- ▶ Measure ion fragments produced during carbon therapy with medipix.
- ▶ Backtrack to beam position.
- ▶ By relating production sites of ions to beam profile treatment can be reconstructed.

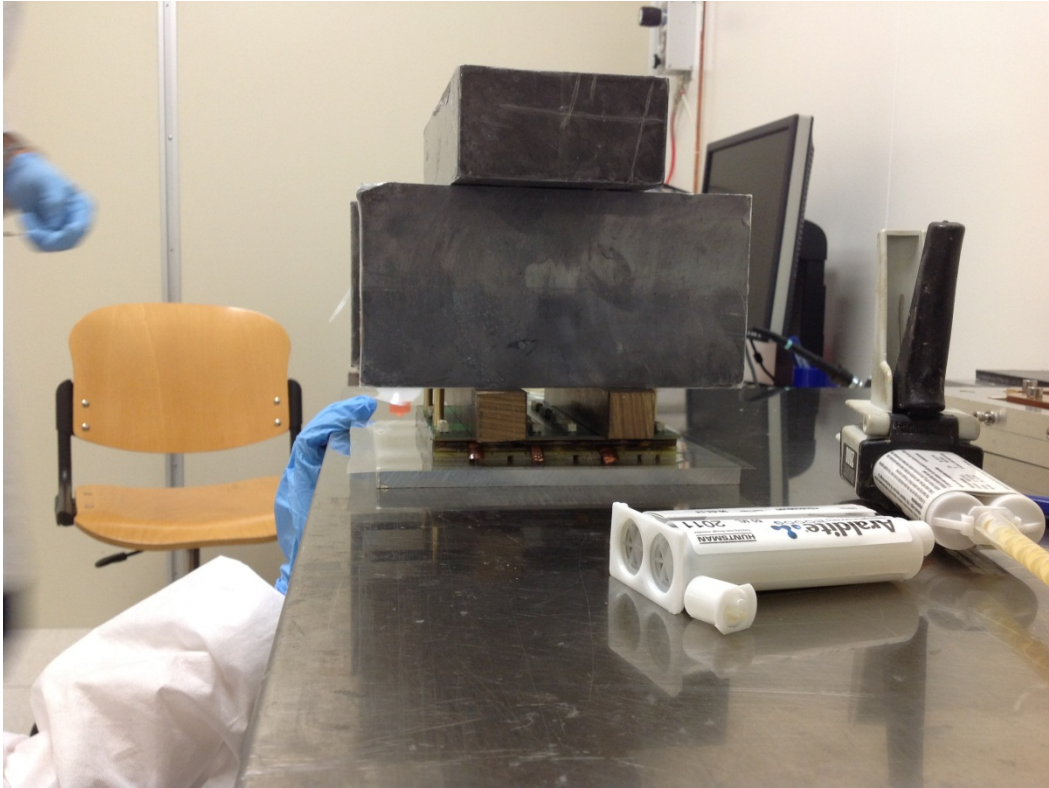


Neutron Detection and Waste

- ▶ Neutron detection concept is a medipix with a converter layer, or possibly a stack.
- ▶ Waste characterisation using medipix to detect Fe57 for waste stored at the CERN ISR site.



Other ARDENT Activities



Any Questions

