

# School of Physics and Astronomy

## QUANTUM INFORMATION SEMINAR



**Dr Simon Devitt**

**A/DRsch Centre for Quantum Software and Information, UTS, Sydney  
and the founder of h-bar consultants.**

### Quantum Computing Hardware and Software development

The past 5 years has seen an extraordinary explosion in interest and investment in quantum computing systems and other technological devices based on active quantum components. Major investment from the private sector from Google, IBM, Microsoft, Alibaba and others has solidified quantum computing as a major revolution in IT technology in the 21st century. In this talk I will overview the basic theoretical structures for large scale quantum computers and communications systems. Regardless of the hardware, the models of quantum computing is similar across multiple platforms and we will examine the requirements and challenges for several major hardware systems such as Ion traps, Optics, superconducting systems and donor based systems. Aside for computational systems, many of these hardware models can be adapted to other tasks such as quantum communications. Towards the end of this talk we will also discuss the field of quantum software engineering, how we can program and ultimately operate these machines and how we can use more sophisticated techniques to educate and train a new generation of software engineers: a problem that poses serious challenges of its own.

Date:	Thursday 22 August
Time:	3pm
Venue:	L1, Large Seminar Room 107, 10 College Walk, Clayton

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