



## SYNOPSIS

A working quantum computer would be revolutionary because certain problems, such as simulating quantum materials or factorization, are easily solved on a quantum computer and probably forever hard on non-quantum computers no matter how small or how fast. Quantum computing technology is at an early stage so we do not yet know which medium is best. I discuss the principles of quantum computing, technological efforts for

its realization (embellished with animated films), and applications for when a quantum computer eventually works.



## BIOGRAPHICAL PROFILE: *Barry Sanders*



Prof. Barry Sanders is iCORE Chair of Quantum Information Science and Director of the Institute for Quantum Information Science at the University of Calgary.

He received his Bachelor of Science degree from the University of Calgary in 1984 and a Diploma of Imperial College supervised by Professor T. W. B. Kibble. He completed a PhD in 1987 at Imperial College supervised by Professor Sir Peter Knight.

Prof. Sanders is especially well known for seminal contributions to theories of quantum-limited measurement, highly non-classical light, practical quantum cryptography and optical implementations of quantum information tasks. His current research interests include quantum resources & algorithms, optical & atomic implementations of quantum information tasks and protocols, quantum processes in biological systems, and machine learning for quantum control.

Prof. Sanders is a Fellow of the Institute of Physics (U.K.), the Optical Society of America, the Australian Institute of Physics, and the American Physical Society, and is a senior fellow for the Canadian Institute for Advanced Research.



## School of Chemistry and Physics Quantum Research Group

cordially invites you to attend a

## Public Lecture

# Whither Quantum Computing?

by

**Professor Barry Sanders**  
*University of Calgary, Canada*



**Date:** Monday, 17 March 2014

**Venue:** Senate Chamber, UKZN Westville Campus

**Time:** 5:00 for 5:30 pm

*This occasion will be used to launch the UKZN Student Chapter of the Optical Society of America*

Light refreshments will be provided

**ENQUIRIES:** Email Prof. Francesco Petruccione on [Petruccione@ukzn.ac.za](mailto:Petruccione@ukzn.ac.za)  
or Yaseera Ismail on [ukzn.osa.studentchapter@gmail.com](mailto:ukzn.osa.studentchapter@gmail.com)

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