

# Joint TcSUH/Physics Colloquium

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## Dr. Barry Sanders

iCORE Chair of Quantum Information Science  
Director of the Institute for Quantum Information Science  
University of Calgary



**Thursday, April 12, 2012**

Room 102, University of Houston Science Center  
4:00 pm to 5:00 p.m.

## Whither Quantum Computing?

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, and applications for when a quantum computer eventually works.

## Bio

Dr. Barry Sanders is an iCORE Chair of Quantum Information Science and Director of the Institute for Quantum Information Science at the University of Calgary. He 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 and algorithms, optical and atomic implementations of quantum information tasks and protocols, quantum processes in biological systems, and machine learning for quantum control. Dr. Sanders is a Fellow of the Institute of Physics (U.K.), the Optical Society of America, the Australian Institute of Physics, the American Physical Society, and the Canadian Institute for Advanced Research. He is a past President of the Australian Optical Society, former Secretary-Treasurer of the American Physical Society Topical Group on Quantum Information, past Chair of the Canadian Association of Physicists Division of Atomic and Molecular Physics and Photonic Interactions, past Founding Co-Chair of the Canadian Association of Physicists Division of Atomic, Molecular and Optical Physics, a former member of the American Institute of Physics Education Advisory Committee, and an editorial board member for Physical Review A. In addition, Dr. Sanders serves on numerous conference committees for the American Physical Society, the International Society for Optical Engineering (SPIE), the Optical Society of America (OSA), and international quantum information conferences.

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*Texas Center for Superconductivity at the University of Houston*

