

## Raymond Laflamme

### Director of the Institute for Quantum Computing

Dr. Raymond Laflamme was born in Quebec City and did his undergraduate studies in Physics at Universite Laval. He then moved to the University of Cambridge where he survived Part III of Mathematical Tripos before earning his PhD in the Department of Applied Mathematics and Theoretical Physics (DAMTP) under the direction of Stephen Hawking. Laflamme and Don Page are responsible for changing Hawking's mind on the direction of time in a contracting Universe (as described in Hawking's best-seller "A Brief History of Time"). After his PhD, Laflamme had post-doctoral and research fellowships at the University of British Columbia and the University of Cambridge. After the fellowships, Laflamme spent nine years at Los Alamos National Laboratory, where he became an Oppenheimer Fellow in 1994. In 2001 he joined the Perimeter Institute for Theoretical Physics as a founding member. He also co-founded the Institute for Quantum Computing (IQC) with Michele Mosca and has been its Director since 2002.

Laflamme is a respected pioneer and leader in quantum information processing, which earned him Fellowships from the American Association for the Advancement of Science, the American Physical Society and the Royal Society of Canada. In 2010 he founded Universal Quantum Devices, a startup commercializing spinoffs of quantum information research, with colleagues Thomas Jennewein and Steve MacDonald.

### Research Interests:

- Understanding the impact of manipulating information using the laws of quantum mechanics
- Development of methods to protect quantum information against noise through quantum control and quantum error correction for quantum computing and cryptography
- Implementation of ideas and concepts of quantum information processing using nuclear magnetic resonance and develop scalable methods of control of quantum systems
- Develop blueprints for quantum information processors such as linear optics quantum computing (LOQC)

### Degrees:

- PhD, D.A.M.T.P., University of Cambridge, 1988
- Part III of Math. Tripos, D.A.M.T.P., University of Cambridge, 1984
- BSc, Physics, Universite Laval, 1983



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### Awards & Honours:

- Canada Research Chair in Quantum Information, renewal, 2009-present
- Fellow of the Royal Society of Canada, 2008
- Premier's Discovery award in Natural Science and Engineering (including a \$500 000 grant)
- NSERC's inaugural Top 50 Discoveries list for 2006.

### Major Positions:

<b>Director</b>	Institute for Quantum Computing, University of Waterloo	2002- Present
<b>Associate Researcher</b>	Perimeter Institute	2001- Present
<b>Professor</b>	Department of Physics, University of Waterloo	2001-Present
<b>Scientific Director</b>	Quantum Works	2006- Present

