

Ish Dhand  
Curriculum Vitae  
August 26, 2015

PERSONAL DETAILS

---

- Office Address: Institute for Quantum Science and Technology, University of Calgary, 2500 University Drive NW, Calgary, AB, Canada, T2N 1N4
- Email: [ishdhand@gmail.com](mailto:ishdhand@gmail.com)
- Webpage: <http://ishdhand.me/>
- Date of Birth: 04 February, 1990
- Citizenship: Indian
- Gender: Male

EDUCATION

---

2015	Ph.D., Physics (expected Dec. 2015)	University of Calgary, Canada
2012	B.Tech., Computer Science	Indian Institute of Technology Kanpur

PUBLICATIONS

---

- 2015 He Lu, Ish Dhand, Abdullah Khalid, Barry C. Sanders, Yu-ao Chen, and Jian-Wei Pan. Experimental verification of accurate and precise characterization of linear optics. *Manuscript in preparation*
- 2015 Ish Dhand and Sandeep K. Goyal. Realization of arbitrary discrete unitary transformations using spatial and internal modes of light, 2015. [arXiv:1508.06259](#)
- 2015 Ish Dhand, Abdullah Khalid, He Lu, and Barry C. Sanders. Accurate and precise characterization of linear optical interferometers, 2015. [arXiv:1508.00283](#)
- 2015 Ish Dhand, Barry C. Sanders, and Hubert de Guise. Algorithms for  $SU(n)$  boson realizations and  $\mathcal{D}$ -functions, 2015. [arXiv:1507.06274](#)
- 2014 Ish Dhand and Barry C. Sanders. Stability of the Trotter-Suzuki decomposition. *J. Phys. A: Math. Theor.*, 47(26):265206, July 2014. [arXiv:1403.3469](#)

TALKS AND CONFERENCE PARTICIPATION

---

- 2015 Ish Dhand, Abdullah Khalid, He Lu, and Barry C. Sanders, Accurate and Precise Characterization of Linear Optical Interferometers (*contributed talk*), Canadian Association of Physics (CAP) Congress, Edmonton, Alberta, Canada. 18 June 2015.
- 2015 Ish Dhand, Barry C. Sanders, and Hubert de Guise, Group-Theoretic Methods in Multi-Photon Interferometry. (*contributed poster*), Canadian Association of Physics (CAP) Congress, Edmonton, Alberta, Canada. 18 June 2015.

- 2015 Ish Dhand, Hubert de Guise and Barry C. Sanders, Algorithms for Boson Realizations of  $SU(n)$  (*contributed talk*), Theory Canada 10, Calgary, AB, Canada. 12 June 2015.
  - 2015 Ish Dhand, Hubert de Guise, Abdullah Khalid, He Lu and Barry C. Sanders, Design, Characterization and Simulation of Linear Optical Devices (*invited talk*), Workshop on Multi-Photon Interferometry, Shanghai, China. 8 May 2015.
  - 2015 Ish Dhand, Hubert de Guise and Barry C. Sanders, Group-theoretic Algorithms for Multiphoton Interferometry (*contributed poster*), Quantum Information Processing (QIP), Sydney, NSW, Australia. 12 January 2015.
  - 2014 Ish Dhand and Joydip Ghosh, Quantum Simulation and Implementations (*invited poster*), Alberta Quantum-Nano Workshop, Red Deer, Alberta, Canada. 14 July 2014.
  - 2013 Ish Dhand and Barry C. Sanders, Finite precision in Trotter-Suzuki decomposition (*contributed talk*), Canadian Quantum Information Students' conference, Calgary, Alberta, Canada. 24 Jun 2013 - 29 Jun 2013.
  - 2013 Ish Dhand and Barry C. Sanders, Finite precision in Trotter-Suzuki decomposition (*invited talk*), Institute for Quantum Computing, University of Waterloo, Waterloo, Ontario, Canada. 6 Jun 2013
  - 2013 Ish Dhand and Barry C. Sanders, Finite precision in Trotter-Suzuki decomposition (*contributed talk*), CAP Congress 2013, Montreal, Quebec, Canada. 27 May 2013 - 31 May 2013.
- Presenter underlined

#### COMPETITIVE AWARDS AND ACHIEVEMENTS

---

- 2015 DAMOPC Best Student Oral Presentation Award by Division of Atomic, Molecular and Optical Physics, Canadian Association of Physicists.
- 2015 Awarded \$2275 Departmental Graduate Student Excellence Award by Department of Physics and Astronomy, University of Calgary.
- 2014 Awarded \$2300 Departmental Graduate Student Excellence Award by Department of Physics and Astronomy, University of Calgary.
- 2013 Awarded \$3600 Queen Elizabeth II Fellowship, 2013 by University of Calgary.
- 2012 Awarded \$7200 Departmental Fellowship, 2012-2013 by the Department of Physics and Astronomy, University of Calgary.
- 2009 Awarded \$6000 Aditya Birla Scholarship by Aditya Birla Group. Ten out of 10,000 incoming students to the Indian Institutes of Technology receive the Aditya Birla Scholarship.
- 2008 Awarded the Indian Physics Association prize for the Best Solution to a Challenging Theoretical Problem by Indian Physics Association.
- 2008 Stood 22<sup>nd</sup> all over India in the Joint Entrance Examination out of the 600,000 candidates conducted by the Indian Institutes of Technology.
- 2008 Awarded Gold Medal in Indian National Physics Olympiad.
- 2007 Represented India at the 8<sup>th</sup> Asian Physics Olympiad at Shanghai.

- 2006    Awarded the National Child Award by the Prime Minister of India on behalf of Ministry of Human Resource Development, Government of India.
- 2004    Awarded National Bal Shree for creative scientific innovation by the President of India on behalf of Ministry of Human Resource Development, Government of India.

#### ACTIVE COLLABORATIONS

---

- Yu-ao Chen, University of Science and Technology China, Shanghai on experimental implementations of multi-photon interferometer.
- Sandeep K. Goyal, University of Calgary, Calgary, on linear optical realizations of arbitrary unitary transformations in spatial and internal degrees of freedom.
- Hubert de Guise, Lakehead University, Thunder Bay, Canada on group theoretic methods in multi-photon interferometry.
- Barry C. Sanders, University of Calgary, Calgary, Canada on complementarity in multi-photon interferometry.
- Urbasi Sinha, Raman Research Institute, Bangalore, India on novel implementations of linear optics.

#### TEACHING EXPERIENCE

---

- 2015    Instructor, *one day course on A first encounter with quantum mysteries* at University of Calgary Continuing Education.
- 2015    Teaching assistant, *Quantum mysteries and paradoxes*. Designed and delivered two lectures.
- 2015    Teaching assistant, *Electromagnetic theory I*. Designed and delivered two review lectures.
- 2014    Teaching assistant, *Freshman mechanics*.
- 2013    Teaching assistant, *Senior physics laboratory*.
- 2012    Teaching assistant, *Freshman mechanics*.

#### SUPERVISION AND SERVICE

---

- 2015    Organizer of Workshop on Multi-Photon Interferometry at Shanghai, China during 7-11 May 2015.
- 2014    Supervised summer undergraduate student on multi-photon interferometry at IQST Calgary.
- 2013    Organizer of CQISC, Canadian Quantum Information Students' Conference held in June 2013 at Calgary.
- 2012    Organizer of PHAS Lunches, fortnightly lunch talks in the physics department at University of Calgary.
- 2011    Editor of the science and technology magazine of IIT Kanpur.
- 2010    Organizer and chair of ICARUS-2010, undergraduate research conference organized at IIT Kanpur.

- **Barry C. Sanders**  
Professor, Department of Physics and Astronomy  
*Office Address:* SB 303, University of Calgary, 2500 University Dr. NW,  
Calgary, AB, T2N 1N4, Canada  
*Email:* [sandersb@ucalgary.ca](mailto:sandersb@ucalgary.ca)
- **Hubert de Guise**  
Professor, Department of Physics, Lakehead University  
*Office Address:* CB 4033, Lakehead University, 955 Oliver Road, Thunder Bay, ON, Canada, P7B 5E1  
*Email:* [hubert.deguise@lakeheadu.ca](mailto:hubert.deguise@lakeheadu.ca)
- **Christoph Simon**  
Associate Professor, Department of Physics and Astronomy  
*Office Address:* SB 313, University of Calgary, 2500 University Dr. NW,  
Calgary, AB, Canada, T2N 1N4  
*Email:* [csimo@ucalgary.ca](mailto:csimo@ucalgary.ca)
- **David W. Hobill**  
Associate Professor, Department of Physics and Astronomy  
*Office Address:* SB 539, University of Calgary, 2500 University Dr. NW,  
Calgary, AB, Canada, T2N 1N4  
*Email:* [hobill@ucalgary.ca](mailto:hobill@ucalgary.ca)