

Alex Han

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Citizenship : Canadian
Speaks : English, Chinese

Education & Scientific Expertise

PhD Physics (2009-present) The University of British Columbia (UBC)

- ▶ Quantum mechanics; photo-molecular interaction; coherent control
- ▶ Linear and nonlinear optics and photonics; ultrafast and multiphoton laser physics; statistical optics and optical coherence; photonic structures and random lasers;
- ▶ Computational physics and chemistry
- ▶ Quantum chemistry; structures and dynamics of molecules; ultracold physics
- ▶ Spectroscopy; physical chemistry; excited state dynamics and photochemistry; gas and solid state physics
- ▶ Laboratory skills (electronics, optics, lasers);

BSc (Hon.) Physics and Math (2005-2009)
The University of British Columbia

Employment History

- **Research Assistant** (2009-present), Prof Valery Milner, Prof Moshe Shapiro, Dept of Physics and Astronomy, and Dept of Chemistry, UBC
- **Teaching Assistant** (2009-present), quantum mechanics (Carl Wieman Science Education Initiative), quantum chemistry, physics labs, Dept of Physics and Astronomy, UBC
- **NSERC USRA Research Assistant** (May-August 2008), Prof Anton Burkov, Dept of Physics, University of Waterloo, Ontario

Technical Skills

Programming

- ▶ Python: object-oriented, functional and performance programming; NumPy/SciPy, pandas, matplotlib; IPython
- ▶ Java, HTML/CSS, JavaScript
- ▶ Data analytics and visualization (Python, Gnuplot, Mathematica, Matlab)
- ▶ Numerical algorithms, scientific computation, statistical simulation (Python, Fortran)

Computing

- ▶ Algorithms and data structures
- ▶ Object-oriented programming and design, software development best practices
- ▶ Mac OS, Linux and clusters (bash, pbs), Windows
- ▶ Fluent in Apple Keynote, Numbers, Pages (and Office equivalent); LaTeX

Applied Mathematics

- ▶ Partial and ordinary differential equations; linear and nonlinear dynamics; advanced calculus
- ▶ Linear algebra, abstract algebra, discrete mathematics
- ▶ Complex and real analysis; Fourier analysis and signal processing
- ▶ Probability, statistical computation and analysis, random processes
- ▶ Numerical analysis and modelling

❑ Scientific Publication

- “Nature of quantum states created by one photon absorption: pulsed coherent vs pulsed incoherent light”, AC Han, M Shapiro, P Brumer, [J. Phys. Chem. A](#) **2013**, **117**, 8199–8204
- “Linear response in the strong-field domain: ultrafast wave packet interferometry in the continuum”, AC Han, M Shapiro, [J. Phys. B: At. Mol. Opt. Phys.](#) **46** (2013) 085401 (invited)
- “Linear response in the strong field domain”, AC Han, M Shapiro, [Phys. Rev. Lett.](#) **108**, 183002 (2012)
- “Pulsed adiabatic photoassociation via scattering resonances”, AC Han, E Shapiro, M Shapiro, [J. Phys. B: At. Mol. Opt. Phys.](#) **44** (2011) 154018

❑ Awards & Scholarships

- UBC Four-Year Fellowship, 2012-2015
- UBC Faculty of Science Graduate Award, 2009-2011
- NSERC Undergraduate Student Research Award (USRA), May-August 2008
- UBC Summer Scholarship, July 2007
- UBC President’s Entrance Scholarship, August 2005
- Province of British Columbia Government Provincial Exam Scholarship, August 2005
- British Columbia Provincial Scholarship Award, First Place in Provincial Exams, August 2005

❑ Academic Theses

- ▶ PhD Thesis (in progress), “Coherence and Control in Photo-molecular Wave Packet Dynamics”. Supervised by Prof Valery Milner, and Prof Moshe Shapiro, Department of Physics and Astronomy, and Department of Chemistry, UBC
- ▶ BSC Honours Thesis (September 2008 - May 2009) “[The Two-Body Universal Energy Spectrum of Interacting Ultracold Atoms Near Feshbach Resonances](#)”, Supervised by Prof Fei Zhou, Department of Physics and Astronomy, UBC

❑ Miscellaneous

- Member of Golden Key International Honour Society
- Tourism Sales Representative, April-October 2005, Gray Line West, Vancouver, BC

❑ Professional Activities

- ▶ Invited Speaker, *Coherence and Control in the Quantum World: The Legacy of Moshe Shapiro*, Aug 2014, UBC
- ▶ Speaker, on behalf of Prof Moshe Shapiro, *Peter Wall Institute & 73rd Okazaki Conference on Coherent and Incoherent Wave Packet Dynamics*, Oct-Nov 2013, Okazaki, Japan
- ▶ Poster Presentation, *Gordon Research Conference on Quantum Control*, Aug 2011, South Hadley, MA, USA
- ▶ Poster Presentation, *Chemistry and Physics of Matrix Isolated Species (MATRIX2011)*, July 2011, UBC
- ▶ Poster Presentation, *Gordon Research Conference on Atomic and Molecular Interactions*, Aug 2010, New London, NH, USA
- ▶ Volunteer, *Conference on Vacuum Ultra-Violet and X-ray Physics (VUVX2010)*, July 2010, UBC