Claire K. Thomas

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Education

2013–present **Ph.D. Candidate**, *University of California, Berkeley*, Atomic and Optical Physics, *Quantum emulation with a Bose-Einstein Condensate in a controlled bichromatic optical lattice.* Completion: May 2017.
Committee: Profs. Dan Stamper-Kurn, Ehud Altman, Naomi Ginsberg, Angelica Stacy

2010–2013 **Master of Arts in Physics**, *University of California, Berkeley*.

2006–2010 **Bachelor of Arts**, *Boston University*, Magna Cum Laude, Physics with Distinction.
Minor in Mathematics

Experience

Dec 2010 – present **University of California, Berkeley**, *Graduate Research*, Probing the band structure of an atomic kagome lattice, Professor Dan M. Stamper-Kurn. Berkeley, CA.

- Explore spinor physics and lattice physics for insights into condensed matter systems using a Bose-Einstein condensate (BEC) of ^{87}Rb atoms in the F=1 manifold
- Designed and assembled parts of our high and ultra-high vacuum systems (Solidworks)
- Designed and built a complex optical setup with 10 beams that are intensity, frequency and phase controlled and intersect at the location of our 10-μm-diameter BEC
- Designed and implemented a sensitive feedback system for our optical beam intensities (Eagle)
- Performed calculations to explain the time-evolution of the atomic wavefunction after exposure to a pulsed lattice
- Performed experiments with strongly interacting atoms in the bichromatic lattice

Dec 2008 – Aug 2010 **Massachusetts Institute of Technology**, *Undergraduate and Post-Grad Research*, Double Chooz neutrino physics experiment, Professor Janet Conrad. Cambridge, MA.
Undergraduate Thesis: *Background Studies for Double Chooz: Identifying ^{9}Li Decay*

- Developed simulation of radioactive decay of any isotope within the experimental apparatus in order to distinguish light-emitting decays from the antineutrino signal (C++)
- Performed statistical analysis to try to distinguish simulations data from ^{9}Li decay and antineutrino signal

Jun 2008 – Aug 2008 **Columbia University**, *Undergraduate Research*, Double Chooz neutrino physics experiment, Professor Mike Shaevitz. New York, NY.

- Built and tested prototype of a cosmic-ray muon detector

May 2007–Jun 2008 **Boston University**, *Undergraduate Research*, Electrical transport in graphene, Professor Bennett Goldberg. Boston, MA.

- Micro-cleaved, e-beam patterned and characterized single and bilayer graphene samples using transport and Raman Scattering

Fellowships and Honors

June 2012 Scientific American profile, *30 under 30*

2010 Department of Energy Graduate Research Fellowship (accepted)

2010 National Science Foundation Graduate Research Fellowship (declined)

Publications

June 2016 C. K. Thomas, T. H. Barter, T.-H. Leung, S. Daiss, Dan M. Stamper-Kurn, *Signatures of spatial inversion asymmetry of an optical lattice observed in matter-wave diffraction,* Physical Review A 93, 063613 (2016).

Sept 2011 Gyu-Boong Jo, Jennie Guzman, Claire K. Thomas, Pavan Hosur, Ashvin Vishwanath, Dan M. Stamper-Kurn, *Ultracold Atoms in a Tunable Optical Kagome Lattice,* Physical Review Letters 108, 045305 (2012).

Jul 2011 J. Guzman, G.-B. Jo, A. N. Wenz, K. W. Murch, C. K. Thomas, D. M. Stamper-Kurn, *Long timescale dynamics of spin textures in a degenerate F=1 ^{87}Rb spinor Bose gas,* Physical Review A 84, 063625 (2011).

Languages

English **Fluent** *native*

French **Competent**