



# Tess Eleonora Smidt

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Berkeley, CA

## Education, Skills, and Coursework

### UC Berkeley

#### *Pursuing Ph.D. in Physics*

Fall 2012 - Current

NSF Grad. Research Fellow

#### *I have experience with...*

C++, Python, Fortran, Unix, Meteor, MongoDB, MySQL, PHP, HTML, JS, AutoCAD, Rhinoceros, Adobe CS, 3D printers, lasercutters, waterjets, and supercomputers.

### UC Berkeley

#### *M.A. in Physics*

Fall 2012 - Spring 2014

GPA: 3.8/4.0

#### *Some courses I've taken include..*

Relativistic Quantum Field Theory, Advanced Quantum Mechanics, Computational Classical Mechanics, Particle Accelerator Physics, Design Computing, Statistical Physics, Relativity, Russian, and Architectural Design Studio.

### MIT

#### *S.B. in Physics with Minor in Architecture*

Fall 2008 - Spring 2012

GPA: 4.5/5.0

## Advanced computational modeling

### Neaton Group

#### *(Molecular Foundry)*

Fall 2013 - Current

Designing materials and calculating their quantum mechanical properties on supercomputers. Proposed a new class of crystal structures. Using statistical physics and the Metropolis-Hastings algorithm to simulate the crystal growth of these structures.

### DAEdALUS

#### *Collaboration*

#### *(MIT Neutrino Group)*

Spring 2011 - Spring 2012

Simulated particle physics, nuclear physics, and heat transfer to design a new neutrino source. Wrote custom finite element analysis software to ensure beam target could absorb megawatts of power from bombarding protons.

### Compact Muon Solenoid (CERN)

Summer 2012

Conducted preliminary feasibility study of whether a new particle interaction could be detected at the Large Hadron Collider: Higgs bosons interacting with each other. Simulated particle events and detector response.

## Design of physical systems

### Analytis Lab

#### *(UC Berkeley)*

Spring 2013 - Spring 2014

Operated some of the world's strongest magnets and most intense x-ray sources to characterize a new quantum magnetic material. Created lab database to connect material synthesis methods with experimental data.

### MicroBooNE Collaboration

#### *(Fermilab)*

Summer 2010 - Spring 2011

Designed spatially constrained 40'x6'x2' light detection system support structure for a 70-ton neutrino detector. Collaborated with structural engineer to finalize design. Structure was installed in 2013.

### Lightguides

#### *(MIT Neutrino Group)*

Fall 2009 - Fall 2011

Developed scalable and efficient method for fabricating acrylic lightguides to enable light detection in kiloton neutrino detectors.

## Independent ventures

### Cosmic Ray Chandeliers

Fall 2010 - Spring 2011

Awarded funding by MIT to design, fabricate, and install two 4 feet tall chandeliers that illuminate upon detecting cosmic ray muons – particles created when nuclei from outer space bombard Earth's atmosphere. Formed and led a team of three other undergraduates.

[blondegeek.net/cosmicray/](http://blondegeek.net/cosmicray/)

### blondegeek.net, Owner

Summer 2006 - Current

Launched t-shirt company in Summer 2006 at age 16. Designed web site, created customer and product databases and wrote inventory management software. During eight years of business, designed and sold thousands of shirts in more than 10 countries.

*Publications*

Modic, K., **Smidt, T.**, Kimchi, I., et al., *Realization of a three-dimensional spin-anisotropic harmonic honeycomb iridate*, Nature Communications 5 (2014). (arXiv:1402.3254)

Briese, T., et al., *Testing of Cryogenic Photomultiplier Tubes for the MicroBooNE Experiment*, Journal of Instrumentation 8, T07005 (2013). (arXiv:1304.0821)

Bungau, A. et al. *Proposal for an electron antineutrino disappearance search using high-rate  $^8\text{Li}$  production and decay*, Physical Review Letters 109, 141802 (2012). (arXiv:1205.4419)

Bungau, A., **Smidt, T.** et al. *Simulations of Pion Production in the DAE $\delta$ ALUS Target*, Conference proceedings for the International Particle Accelerator Conference (IPAC) 2012. (arXiv:1205.4419)

Bugel, L. et al. *Demonstration of a Lightguide Detector for Liquid Argon TPCs*, Nuclear Instruments and Methods in Physics Research Section A (2011). (arXiv:1101.3013)

Alonso, J., et al. *Expression of Interest for a Novel Search for CP Violation in the Neutrino Sector: DAE $\delta$ ALUS*, 2010 (arXiv:1006.0260)

*Presentations*

*A New Spin-anisotropic Harmonic Honeycomb Iridate*  
Molecular Foundry  
Theory Seminar  
(April 2014)

*DAE $\delta$ ALUS Target Design Optimization*  
American Physical  
Society April Meeting  
(2012)

*Light Detection in Liquid Argon Time Projection Chamber*  
Fermilab New  
Perspectives Conference  
(June 2011)

*Coupling of Structure and Magnetism in a New Harmonic Honeycomb Iridate*  
American Physical  
Society March Meeting  
(2014)

*Building Neutrino Detectors*  
MIT Family Weekend  
Physics Reception  
(October 2011)

*References available upon request.*