

Dept. of Physics and Astronomy  
Stony Brook University  
Stony Brook, NY 11794

☎ (919)-349-0627  
✉ shomiller@gmail.com  
📄 shomiller.github.io

# Samuel D. Homiller

## Education

- **Stony Brook University – Dept. of Physics and Astronomy**  
PhD in Physics (Expected May, 2020) Advisor: Prof. Patrick Meade
- **University of Illinois at Urbana-Champaign – Dept. of Physics**  
B.S., Physics – Magna cum Laude, Highest Distinction, May 2015  
Thesis: Search for Nucleon Decays into Invisible Channels in Xe-136 Advisor: Prof. Liang Yang  
B.S., Mathematics – Magna cum Laude, Highest Distinction, May 2015
- **North Carolina School of Science and Math**  
High School Diploma

## Research Interests

**Theoretical Particle Physics** including Higgs and Electroweak Physics, Beyond the Standard Model Physics, Effective Field Theories, Model Building, Flavor Physics, LHC and Future Collider Phenomenology, and Particle Dark Matter.

## Academic Positions

- **Graduate Research Fellow**, Brookhaven National Laboratory  
August 2018 - August 2019  
Host Scientist: Sally Dawson
- **Research Assistant**, Yang Institute for Theoretical Physics, Stony Brook University  
May 2017 - Present  
Advisor: Patrick Meade
- **Undergraduate Research Asst.**, Nuclear Experimental Group, University of Illinois  
August 2012 - August 2015  
Advisor: Liang Yang
- **Undergraduate Research Asst.**, Inst. for Condensed Matter Theory, University of Illinois  
May 2015 - August 2015  
Advisor: Karin Dahmen
- **Undergraduate Researcher (NSF REU)**, Dept. of Physics, Louisiana State University  
June 2012 - August 2012  
Advisor: Thomas Kutter

## Publications

1. *Measurement of the Triple Higgs Coupling at a HE-LHC*,  
with P. Meade, JHEP **1903** (2019) 055 [arXiv:1811.02572].

2. *Aligned and Spontaneous Flavor Violation*,  
with D. Egaña-Ugrinovic and P. Meade, arXiv:1811.00017, submitted to PRL.
3. *Search for nucleon decays with EXO-200*,  
J. B. Albert et al. (EXO-200 Collaboration), Phys. Rev. D **97** 072007 (2018). [arXiv:1710.07670].
4. *First search for Lorentz and CPT violation in double beta decay with EXO-200*,  
J. B. Albert et al. (EXO-200 Collaboration), Phys. Rev. D **93** 072001 (2016). [arXiv:1601.07266].

### Community & White Papers, Conference Proceedings

- *Higgs Physics at the HL-LHC and HE-LHC*,  
[arXiv:1902.00134].

### — Talks Given

- *Measuring the Higgs Trilinear Coupling at an HE-LHC*, October 19, 2018.  
High Energy Theory Lunch Discussion, Brookhaven National Laboratory.
- *Exploring the Higgs Sector*, June 22, 2018.  
TASI 2018 Student Talk, University of Colorado, Boulder.
- *Measuring the Higgs Trilinear Coupling at an HE-LHC*, May 8, 2018.  
Phenomenology 2018 Symposium, University of Pittsburgh.
- *The Higgs Self-Coupling and Future Colliders*, April 16, 2018.  
Hang Yuan Physics Lecture (No. 109), Shaanxi Normal University, Xi'an, China.
- *Measuring the Higgs Trilinear Coupling at an HE-LHC*, April 5, 2018.  
HL/HE-LHC Meeting, Fermi National Accelerator Laboratory.
- *Measuring the Higgs Trilinear Coupling at an HE-LHC*, October 12, 2017.  
Brookhaven Forum 2017, Brookhaven National Laboratory.
- *Search for Nucleon Decays in  $^{136}\text{Xe}$  with EXO-200*, January 30, 2015.  
Physics Undergraduate Research Symposium, University of Illinois at Urbana-Champaign.
- *Polynomials Constant on a Line*, December 12, 2013.  
Illinois Geometry Lab Open House, University of Illinois at Urbana-Champaign.
- *Charged Current Analysis in T2K Reconstruction*, July 27, 2012.  
Summer Undergraduate Research Forum (SURF), Louisiana State University.

### — Awards and Fellowships

- DOE Office of Science Graduate Research Fellowship, 2018 - 2019.
- Silsbee Prize (Travel Award), 2017.
- Ernest M. Lyman Prize (Outstanding Graduating Senior in Physics), 2015.
- Robert E. Hetrick Outstanding Senior Thesis Award, 2015.
- Lorella M. Jones Summer Research Award, 2014.
- James Scholar, University of Illinois at Urbana-Champaign, 2011 - 2015.
- Dean's List, University of Illinois at Urbana-Champaign, Fall 2011 - Spring 2015.
- University Achievement Scholar, University of Illinois at Urbana-Champaign, 2011 - 2015.

## Workshops & Schools Attended

- Theoretical Advanced Study Institute (TASI), *Theory in an Era of Data*, June 2018, University of Colorado, Boulder, CO.
- Prospects in Theoretical Physics (PiTP), *Particle Physics at the LHC and Beyond*, July 2017, Institute for Advanced Study, Princeton, NJ.
- Workshop: Beyond WIMPs: From Theory to Detection, March 2017. Simons Center for Geometry and Physics, Stony Brook, NY.

## Teaching Experience

### ○ Teaching Assistant, Dept. of Physics, Stony Brook University

August 2015 - May 2018

#### Courses Taught:

- PHY 610: Quantum Field Theory I (Grader), Spring 2018
- PHY 252: Modern Physics Laboratory, Fall 2016, Spring 2017
- PHY 123: Classical Physics A (Laboratory), Summer 2016
- PHY 134: Classical Physics Laboratory II, Spring 2016
- PHY 133: Classical Physics Laboratory I, Fall 2015