

# Leon Hostetler

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## Employment

2023–present **Postdoctoral Fellow**

Physics Department, Indiana University, Bloomington, USA

2018–2023 **Graduate Student**

Physics and CMSE Departments, Michigan State University, East Lansing, USA

## Education

**Ph.D., Physics and Computational Mathematics, Science and Engineering**

Michigan State University, September 2023

Dissertation: "Symmetry Breaking and Clock Model Interpolation in 2D Classical O(2) Spin Systems"

Advisor: Alexei Bazavov

**M.S., Physics**

Michigan State University, May 2020

**B.S., Physics and Applied & Computational Mathematics**

Florida State University, Summa Cum Laude, May 2018

Honors Thesis: "Numerical Mass Estimates from Correlation Functions in a 4D SU(2) Higgs Model"

Advisor: Bernd Berg

**A.A., Associate in Arts**

State College of Florida, Manatee-Sarasota, Summa Cum Laude, May 2015

## Selected Honors and Awards

University Distinguished Fellowship, Michigan State University, June 2018–present

College of Natural Science Recruiting Fellowship, Michigan State University, Jan. 2018 (superseded)

Charles and Anna Uhrhan Scholarship, Florida State University, May 2018

Outstanding Graduate Award, State College of Florida, April 2015

Mathematics Department Memorial Award, State College of Florida, April 2015

Image Award, State College of Florida, April 2015

Outstanding Student in Physics, State College of Florida, April 2015

Amish Descendant Scholarship, Amish Descendant Scholarship Fund, 2013

## Research and Teaching Experience

Postdoctoral Fellow, Indiana University, Sept. 2023–present  
Ph.D. Student, Michigan State University, May 2018–Aug. 2023  
Undergraduate Research Assistant (unpaid), Florida State University, Mar. 2017–Mar. 2018  
Math and Physics Tutor, Tallahassee Community College, Aug. 2016–Mar. 2018

## Publications

- (2023) G. Pederiva, A. Bazavov, B. Henke, **L. Hostetler**, D. Lee, H.-W. Lin, and A. Shindler. "Quantum state preparation algorithms for the Schwinger model with a theta term." (in preparation)
- (2023) **L. Hostetler**, R. Sakai, J. Zhang, A. Bazavov, and Y. Meurice. "Symmetry breaking and clock model interpolation in 2D classical  $O(2)$  spin systems". [PoS\(LATTICE2023\)223](#)
- (2023) **L. Hostetler**, R. Sakai, J. Zhang, A. Bazavov, and Y. Meurice. "Symmetry Breaking in an Extended- $O(2)$  Model". Phys. Rev. D **109**, 054514 [arXiv:2312.17739](#)
- (2023) **L. Hostetler**. "Symmetry Breaking and Clock Model Interpolation in 2D Classical  $O(2)$  Spin Systems". Michigan State University, Ph.D. diss. [link](#)
- (2022) **L. Hostetler**, R. Sakai, J. Zhang, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Symmetry Breaking in an Extended- $O(2)$  Model". PoS(LATTICE2022)014 [arXiv:2212.06893](#)
- (2021) **L. Hostetler**, J. Zhang, R. Sakai, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Clock model interpolation and symmetry breaking in  $O(2)$  models". Phys. Rev. D **104** 054505 [arXiv:2105.10450](#)
- (2021) Y. Meurice, A. Bazavov, P. Dreher, E. Gustafson, **L. Hostetler**, R. Sakai, S.-W. Tsai, J. Unmuth-Yockey, and J. Zhang. "From tensors to qubits". PoS(LATTICE2021)608 [arXiv:2112.10005](#)
- (2021) **L. Hostetler**, J. Zhang, R. Sakai, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Clock model interpolation and symmetry breaking in  $O(2)$  models". PoS(LATTICE2021)353 [arXiv:2110.05527](#)
- (2021) G. Pederiva, A. Bazavov, B. Henke, **L. Hostetler**, D. Lee, H.-W. Lin, and A. Shindler. "Quantum State Preparation for the Schwinger Model." PoS(LATTICE2021)047 [arXiv:2109.11859](#)
- (2018) **L. Hostetler**. "Numerical Mass Estimates from Correlation Functions in a 4D  $SU(2)$  Higgs Model." Undergraduate Honors Thesis. DigiNole: FSU Digital Repository [link](#)
- (2015) **L. Hostetler** and R. Shollar. "Some Different Ways to Tackle the Basel Problem." The Pentagon, 75 no 1. pp 4-15. [link](#)

## Presentations

- (2024) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, A. Bazavov, and Y. Meurice. "Symmetry Breaking in an Extended  $O(2)$  Model". QuLAT Collaboration Meeting, [slides](#)
- (2023) **L. Hostetler (speaker)**, "Symmetry Breaking and Clock Model Interpolation in 2D Classical  $O(2)$  Spin Systems". Ph.D. Defense, Michigan State University [slides](#)
- (2023) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, A. Bazavov, and Y. Meurice. "Symmetry Breaking and Clock Model Interpolation in 2D Classical  $O(2)$  Spin Systems". The 40th International Symposium on Lattice Field Theory, Fermilab [link slides](#)
- (2023) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, A. Bazavov, and Y. Meurice. "Symmetry Breaking and Clock Model Interpolation in 2D Classical  $O(2)$  Spin Systems". QuLAT Collaboration Annual Meeting, Fermilab [slides](#)
- (2023) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, A. Bazavov, and Y. Meurice. "Symmetry Breaking and Clock Model Interpolation in 2D Classical  $O(2)$  Spin Systems". Nuclear and particle physics on a quantum computer: where do we stand now? ECT\*, Trento, Italy [link slides](#)
- (2022) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Symmetry Breaking in an Extended- $O(2)$  Model". The 39th International Symposium on Lattice Field Theory. Bonn, Germany [link slides](#)
- (2022) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Symmetry Breaking in an Extended- $O(2)$  Model". The QuLAT Collaboration. Iowa City, Iowa [slides](#)
- (2021) **L. Hostetler (speaker)**, J. Zhang, R. Sakai, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Clock model interpolation and symmetry breaking in  $O(2)$  models". The 38th International Symposium on Lattice Field Theory. MIT (virtual) [link video slides](#)
- (2021) **L. Hostetler (speaker)**, J. Zhang, R. Sakai, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Generalized Clock Models". The QuLAT Collaboration [slides](#)
- (2021) **L. Hostetler (joint speaker)**, J. Zhang, R. Sakai, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Clock model interpolation and symmetry breaking in  $O(2)$  models". The QuLAT Collaboration [slides](#)
- (2021) **L. Hostetler (speaker)**, J. Zhang, R. Sakai, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Clock model interpolation and symmetry breaking in  $O(2)$  models". APS March Meeting [link slides](#)
- (2020) **L. Hostetler (speaker)**, R. Sakai, J. Zhang, J. Unmuth-Yockey, A. Bazavov, and Y. Meurice. "Clock model interpolation and symmetry breaking in  $O(2)$  models". The QuLAT Collaboration [slides](#)

(2020) **L. Hostetler (speaker)**, R. Sakai, and A. Bazavov. "The  $q$ -state "Clock" Model: Monte Carlo Results and Comparison with TRG". The QuLAT Collaboration [slides](#)

(2015) **L. Hostetler (speaker)** and R. Shollar. "Some Different Ways to Sum a Series". 2015 Kappa Mu Epsilon National Convention, Embry-Riddle Aeronautical University. *Winner of Best Presentation Award, and invited to publish in Kappa Mu Epsilon's journal The Pentagon.* [slides](#)

(2015) A. Özgener and **L. Hostetler (joint speaker)**. *LaTeX Workshop*. 2015 Kappa Mu Epsilon National Convention, Embry-Riddle Aeronautical University.

(2014) **L. Hostetler (speaker)** and R. Shollar. "Some Different Ways to Sum a Series". 39th Suncoast Conference, Mathematical Association of America, University of South Florida. [slides](#)

## Extracurricular and Volunteer Experience

Webmaster, Physics Graduate Organization (MSU), 2021–2022  
Science specialist, Brain Bowl Club (SCF), Oct. 2014–May 2015  
Officer, Zeta Xi Math Club (SCF), Oct. 2014–May 2015

## Interests and Skills

- Quantum field theory
- Markov chain Monte Carlo methods, lattice QCD
- Quantum computing, quantum simulation, Qiskit
- High performance computing, MPI, OpenMP, CUDA

## Papers Refereed

- Physical Review E (1)
- PRX Quantum (1)
- Physical Review Letters (1)

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