

Sarah Wesolowski: Academic Curriculum Vitae

Please see sarahwesolowski.github.io for most recent work

Data Scientist

Department of Pathology and Laboratory Medicine, University of Pennsylvania

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EDUCATION

Ph.D. Physics,
Advisor: Prof. Richard Furnstahl
The Ohio State University, Columbus, OH

August 2017

B.S. Physics,
Saint Vincent College, Latrobe, PA

May 2012

PUBLICATIONS

- S. Wesolowski *et al.*, *Rigorous constraints on three-nucleon forces in chiral effective field theory from fast and accurate calculations of few-body observables*, Phys. Rev. C **104**, 064001 (2021).
- D. E. Vanden Berk, S. Wesolowski, *et al.*, *Extreme ultraviolet quasar colours from GALEX observations of the SDSS DR14Q catalogue*, Monthly Notices of the Royal Astronomical Society, Volume 493, Issue 2 (2020)
- J. A. Melendez, R. J. Furnstahl, D. R. Phillips, M. T. Pratala, and S. Wesolowski, *A Gaussian Process Model for Continuous Truncation Errors in Effective Field Theories*. Phys. Rev. C **100**, 044001 (2019)
- S. Wesolowski, R. J. Furnstahl, J. A. Melendez, and D. R. Phillips, *Bayesian parameter estimation for chiral effective field theory: Using nucleon-nucleon phase shifts*, J. Phys. G **46** 045102 (2019)
- J. A. Melendez, S. Wesolowski, R. J. Furnstahl, *Bayesian truncation errors in chiral effective field theory: nucleon-nucleon observables*, Phys. Rev. C **96** 024003 (2017) [**Editor's suggestion**]
- S. Wesolowski *et al.*, *Bayesian parameter estimation for effective field theories*, J. Phys. G **43** 074001 (2016)
- R. J. Furnstahl *et al.*, *Quantifying truncation errors in effective field theory*, Phys. Rev. C **92** 024005 (2015)
- R. J. Furnstahl *et al.*, *A recipe for EFT uncertainty quantification in nuclear physics*, J. Phys. G **42** 034028 (2015)
- J. Wu *et al.*, *Astrophys. J. Suppl.* **201** (2012)

RESEARCH EXPERIENCE

Assistant Professor
Department of Mathematical Sciences,
Salisbury University, Salisbury, MD

2017 - 2022

Three nucleon forces, power counting, and uncertainty quantification in nuclear EFTs.

Model-based machine learning and Bayesian statistics for making predictions in nuclear EFTs.

Model validation and model checking diagnostics for statistical consistency.

Graduate Research Associate 2012 - 2017
Prof. Richard Furnstahl, The Ohio State University, Columbus, OH

Developed framework for Bayesian parameter estimation in general effective field theory (EFT) applications, applied to chiral EFT interactions.

Developed truncation error estimates for general EFTs.

Applied novel statistical methods, e.g., Gaussian processes to extract information from nuclear observables. Assessing impact of data on theory parameters.

Implemented Markov Chain Monte Carlo code for parameter estimation in general EFTs and chiral EFT.

TEACHING EXPERIENCE

Assistant Professor 2017 - 2022
Department of Mathematical Sciences,
Salisbury University, Salisbury, MD

Cosc 120: Computer Science I

Math 155: Modern statistics with computer analysis

Math 160: Introduction to applied calculus

Math 201: Calculus I

Math 202: Calculus II

Math 216: Statistical thinking

Math 310: Calculus III

Math 465: Mathematical modeling

Data science 470: Research methods in Data Science

Math 490: Partial differential equations and applications

Math 495: Advisor for center for applied mathematics and science student project

Graduate Teaching Assistant 2013 - 2014
Department of Physics, The Ohio State University, Columbus, OH

Physics 1251: Electromagnetism, optics, modern physics.

ORGANIZED CONFERENCES

Uncertainties in Calculations of Nuclear Reactions of Astrophysical Interest,
December 2020

Mainz Institute for Theoretical Physics, Johannes Gutenberg University

Bayesian Inference in Subatomic Physics — A Marcus Wallenberg Symposium,
September 2019

Chalmers University of Technology, Chalmers, Sweden

RECENT INVITED TALKS

Nuclear Forces for Precision Nuclear Physics, April 2021,
Institute for Nuclear Theory, University of Washington, Seattle, WA [Virtual]

San Diego State University Department of Physics Colloquium, April 2021,
San Diego State University, San Diego, CA [Virtual]

Artificial Intelligence for Nuclear Physics, March 2020,
Jefferson Lab, Newport News, VA

American Physical Society Division of Nuclear Physics meeting, October 2019,
Arlington, VA

Nuclear structure at the Crossroads, July 2019
Institute for Nuclear Theory, University of Washington, Seattle, WA

AWARDS

Salisbury University Library Course Enhancement Grant, Fall 2021
Fowler Fellowship, The Ohio State University August 2012 - May 2014
University Fellowship, The Ohio State University August 2012 - May 2014
McConnaughey Physics Scholarship, Saint Vincent College, August 2008 - May 2012

REFERENCES

Richard J. Furnstahl furnstahl.1@osu.edu
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Department of Physics, The Ohio State University,
Columbus, OH 43210, USA

Daniel R. Phillips phillid1@ohio.edu
Professor and Director of the Institute of Nuclear and Particle Physics
Institute of Nuclear and Particle Physics and Department of Physics and Astronomy,
Ohio University,
Athens, Ohio 45701, USA

Steven M. Hetzler smhetzler@salisbury.edu
Professor
Department of Mathematics and Computer Science, Salisbury University
Salisbury, MD 41801, USA