ARTHUR CAMPELLO

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EDUCATION

Stanford University – PhD Candidate in Applied Physics *August 2020 - Present*
Cornell University – BA in Physics (3.90) and Economics (3.81) *August 2016 - May 2020*

EXPERIENCE

Stanford Institute for Materials and Energy Science (SIMES)
Graduate Research Assistant *June 2020 - Present*

- Testing the use of Walsh-transformed spectrum elements as input features in fully connected layers to enhance convolutional neural network (CNN) studies of inelastic neutron scattering data (using PyTorch)
- Performing statistical analyses of diffuse neutron data to map bond-dependent spin correlations and uncover quantum spin liquid (QSL) states in the frustrated magnet Zn-Barlowite (using scikit-learn and SciPy)
- Mixing powders of superconducting, quantum-frustrated, and inert crystals to enhance bulk superconductivity; developing and using machine learning approach to simultaneously explore and optimize over mixing-space

Cornell University, Department of Physics
Undergraduate Research Assistant: research in particle, bio-, and atomic physics *August 2016 - May 2020*

SLAC National Accelerator Laboratory
Research Support Intern: numerical simulations of x-ray interactions with electrons *May 2019 - August 2019*

Cornell High Energy Synchrotron Source (CHESS)
Mechanical Design Intern: design and construction of advanced beamline components *June 2015 - August 2016*

SKILLS

ML/AI/Data	TensorFlow, PyTorch, Pandas, scikit-learn, NumPy, SciPy
Coding	Python, MATLAB (fluent) C++, Java, JavaScript (working proficiency)
Operational	Full machine shop training, Microscopic wire-bonding
Languages	English, Portuguese (native), Spanish (fluent), Italian (working proficiency)

PAPERS

Binary Density Estimation using Transformed Fourier-Walsh Diagonalizations
Arthur Campello, submitted to *Journal of Multivariate Analysis*. (preprint link)

Confirmation and variability of the Allee effect in Dictyostelium discoideum cell populations, possible role of chemical signaling within cell clusters
Segota, Edwards, **Campello**, Rappazzo, Wang, et al. 2022. *Physical Bioloy*, vol. 19 (link)

Testing for the continuous spectrum of x rays predicted to accompany the photoejection of an atomic inner-shell electron
Jacobson, Rasovic, **Campello**, Goddard, Dykes, et al. 2021. *Physical Review A*, vol. 104 (link)

A Simple Sample-Changing Robot for Grazing-Incidence X-ray Scattering
Garson, **Campello**, Stein, and Smilgies. 2020. *Journal of Applied Crystallography*, vol. 53 (link)

Bragg Diffraction Transmission Microscopy Using Highly-Monochromated X-rays
Stoupin et al. 2018. *Advances in X-ray Analysis*, vol. 61, pages 205-210. (preview link)

TEACHING ASSISTANTSHIPS

Stanford University
PHYSICS 41: Mechanics (Head TA) *Fall 2023*
PHYSICS 61: Mechanics and Special Relativity *Fall 2022*
Cornell University
PHYS 3317: Applications of Quantum Mechanics *Fall 2019*
PHYS 2214: Oscillations, Waves, and Quantum Physics *Fall 2018, Spring 2019*
PHYS 1112: Mechanics and Heat *Spring 2018*