David Beckwitt, Ph.D.

david.beckwitt@gmail.com | github.com/DVBeckwitt | linkedin.com/in/DVBeckwitt | Full CV

Professional Summary

Ph.D. Candidate Physicist specializing in quantitative modeling, experimental growth and characterization, and machine learning techniques. Specializing in X-ray/neutron scattering, thin-film growth, and structural analysis of van der Waals materials.

Education

Ph.D., Physics, University of Missouri — 2026 (expected)
Dissertation: *Disorder in van der Waals Thin Films* — Advisor: Paul Miceli
M.S., Physics, University of Missouri — 2022
B.S., Physics, Missouri State University — 2020

Technical Skills

Programming: Python, C++, Fortran, Git, SQL, MPI, Bash scripting, LaTeX
Analysis: Monte Carlo methods, PyTorch (CNNs), NumPy, pandas, SciPy
Instrumentation: X-ray/neutron scattering, CVD, PLD, SEM, Raman spectroscopy
Visualization: Matplotlib, Plotly, OriginLab, Jupyter Notebooks, Blender

Research Experience

Graduate Researcher, University of Missouri — 2021–Present

- Developed Python toolkit for quantitative analysis of X-ray scattering (GIWAXS), extracting defect densities and structural parameters.
- Grew phase-controlled thin films via chemical vapor deposition; experimentally validated computational predictions.
- Built machine learning (CNN) models for automated classification of structural disorder from simulated scattering patterns.

Research Intern, NASA Space Consortium — 2019–2020

- Synthesized graphene-based heterostructures (PLD, PVD); performed Raman spectroscopy and electron microscopy characterization.

Research Assistant, Missouri State University — 2017–2020

- Designed and operated pulsed laser deposition system; analyzed thin films with XRD, SEM, Raman spectroscopy.

Selected Publications

- Arendse et al. (2023), *ACS Applied Materials & Interfaces*, 15, 56692. [DOI]
- Beckwitt, *X-ray Diffraction Analysis of Disorder in vdW Films*, APS March Meeting (2024).

Awards & Leadership

- Outstanding Student Research Presentation, Neutron Scattering Society — 2023
- Green Chalk Teaching Award, University of Missouri — 2023
- President/Vice-President, Physics & Astronomy Grad Student Association — 2022–2024