

# SHARAREH SAYYAD, Ph.D.

Theoretical Physicist & Mathematician

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## Professional Summary

Theoretical physicist and mathematician with expertise in non-Hermitian quantum systems, quantum many-body physics, and machine learning for science. Published 20+ peer-reviewed articles in Physical Review Letters, Physical Review Research, Communications Chemistry, SciPost Physics, and Quantum. Experienced in international research leadership, graduate teaching, and mentorship.

## Education

**Ph.D. in Mathematics, Washington State University, Pullman, USA** 2025–Present  
*Thesis: AI for Mathematics and Physics · Sidney G. Hacker Scholarship (2025, 2026) · Saunders Fellowship (2026)*

**M.Sc. in Mathematics, Georg-August University of Göttingen, Germany** 2023–2025  
*1st place among all mathematics master's students (2024)*

**Ph.D. in Physics, University of Hamburg / MPI-MPSD, Germany** 2012–2016  
*Thesis: Nonequilibrium Electron-Lattice Dynamics · IMPRS-UFAST Fellow*

**M.Sc. in Physics, Sharif University of Technology, Tehran, Iran** 2009–2011

**B.Sc. in Physics, Iran University of Science and Technology, Tehran, Iran** 2005–2009  
*1st place among all physics undergraduate students*

## Professional Appointments

**Graduate Teaching Assistant, Washington State University** Jan 2025–Present

**Research Intern (Remote), MPI for Informatics, Saarbrücken, Germany** May 2025–Feb 2026  
*Quantum generative ML algorithms at the intersection of quantum computing and AI*

**Research Scientist, MPI for the Science of Light, Erlangen, Germany** Nov 2021–Sep 2023  
*4 publications in PRResearch & SciPost; mentored bachelor's and master's students*

**Postdoctoral Researcher, Institut Néel, CNRS, Grenoble, France** Jul 2019–Oct 2021  
*3 publications on non-Hermitian dynamics, non-Hermitian chiral anomalies and nonlinear optics*

**Postdoctoral Researcher, University of Tokyo, Kashiwa, Japan** Aug 2017–Mar 2019  
*3 publications on non-equilibrium dynamics & flat-band superconductivity; 1 in IOP Special Celebratory Collection*

**Postdoctoral Researcher, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany** Apr–Jul 2017

## Selected Publications (20+ total · full list on Google Scholar)

- S. Sayyad & G. A. Starkov, “Characterizing all non-Hermitian degeneracies using algebraic approaches: Defectiveness and asymptotic behavior,” *arXiv:2604.16140* (2026)
- S. Bazzi & S. Sayyad, “Revealing NOS linkages by re-evaluation of protein structures,” *Commun. Chem.* **8**, 146 (2025) [Media coverage]
- S. Sayyad, “Realizing exceptional points of any order in the presence of symmetry,” *PRResearch* **6**, L012028 (2024)
- S. Sayyad & J. L. Lado, “Transfer learning from Hermitian to non-Hermitian quantum many-body physics,” *JPCM* **36**, 185603 (2024)
- S. Sayyad et al., “Interplay between symmetry and non-Hermiticity on defective non-Hermitian degeneracies,” *PRResearch* **4**, 023130 (2022).
- S. Sayyad & M. Eckstein, “Slowdown of the electronic relaxation close to the Mott transition,” *PRL* **117**, 096403 (2016)
- S. Sayyad & M. Eckstein, “Coexistence of excited polarons and metastable delocalized states,” *PRB* **91**, 104301 (2015) [Editor's Suggestion]

## Honors, Awards & Fellowships

- **2026:** Full Member, *Sigma Xi* · Sam C. and Ruth Ann Saunders Graduate Fellowship, WSU
- **2025–2026:** Sidney G. Hacker Graduate Mathematics Scholarship, WSU
- **2024:** 1st Rank, mathematics master's students, Göttingen · *IOP Special Celebratory Collection*
- **2015:** Editor's Suggestion, *Physical Review B* · **2009:** 14th Place, National Physics Olympiad, Iran

## Skills & Service

**Programming:** C/C++, Python, Mathematica, MATLAB    **Methods:** DFT, ED, DMRG, (NE)DMFT, (NE)FLEX, Machine Learning

**Peer Review:** Nature Communications, PRL, PRB, PRResearch, SciPost Physics, Communications Physics

**Service:** Co-organizer, *Non-Hermitian Physics international seminar series* · Student volunteer, *WNAR/IMS Annual Meeting* (2026)