ABDUL SABOOR

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Graduate student specializing in semiconductor material modeling and electronic structure tuning using density functional theory (DFT). Experienced in Python programming, open-source package development, and advanced data analysis for materials research.

Education

2025(Tentative)	Ph.D. Candidate in Physics, University of Delaware
2017	M.Phil. in Physics, Quaid-i-Azam University
2015	M.Sc. in Physics, Quaid-i-Azam University
2012	B.Sc. in Mathematics & Physics, University of Azad Jammu & Kashmir

Research Experience

- Investigated band-gap engineering in III-V alloys incorporating Bi for mid-infrared applications.
- Analyzed rare-earth monopnictide nanoparticles embedded in bismide III-V alloys.
- Quantified epitaxial strain effects on III-V materials and transition-metal dichalcogenides.
- Examined metal oxidation in IrO_2 using density functional theory.

Technical & Computational Skills

- **Programming:** Python, MATLAB, Mathematica, PowerShell, Julia (learning)
- **Open Source:** Developed ipyvasp and ipyslides
- **Software:** VASP, Jupyter, Git, Origin, VESTA, LaTeX
- Extensive experience with computational simulations and data analysis.

Publications

- S. Nair, et al., "Engineering metal oxidation using epitaxial strain," *Nat. Nanotechnol.*, (2023)
- A. Saboor, S. Khalid, A. Janotti, "Band-gap reduction and band alignments of dilute bismide III-V alloys," *arXiv:2411.19257* [cond-mat]

Conference Participations

- The 67^{th} Electronic Materials Conference, Duke University NC 2025
- PyCon US, Pittsburgh 2025
- The Franklin Institute Awards Symposium, Temple University, 2025
- American Physical Society (APS) March Meetings, Las Vegas, 2023 and Minneapolis, 2024
- Workshop for density functional theory, Temple University, 2019

Honors & Awards

- University-funded presentation at the APS March Meeting on III-V semiconductor alloys. (2023)
- Awarded prestigious World Federation of Scientists (WFS) scholarship, Switzerland (2016)
- Offered competitive scholarship for doctoral studies at *Universidad Nacional Autónoma de México* (UNAM), Mexico (2015)

References

Prof. Anderson Janotti
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