



# ABDUL SABOOR

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## Research Interests

Density functional theory (DFT) applications, electronic structure tuning in III-V semiconductors, strain effects in materials, and theoretical modeling of material properties.

## Education

<b>2017–Present</b>	Ph.D. in Physics, University of Delaware
<b>2017</b>	M.Phil. in Physics, Quaid-i-Azam University
<b>2015</b>	M.Sc. in Physics, Quaid-i-Azam University
<b>2012</b>	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 monpnictide nanoparticles embedded in bismide III-V alloys.
- Studied epitaxial strain effects on III-V materials and transition-metal dichalcogenides.
- Examined metal oxidation in IrO<sub>2</sub> using density functional theory.

## Technical & Computational Skills

- Developed `ipyvasp`, a Python package for processing VASP calculations.
- Proficient in Python, PowerShell, Bash, MATLAB, and Mathematica; expanding expertise in Julia.
- 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," *Phys. Rev. Mater.* (Submitted, 2024).

## Honors & Awards

- Doctoral scholarship, UNAM, Mexico (2015).
- World Federation of Scientists (WFS) scholarship, Switzerland (2016).

## Conference Participations

- The 67<sup>th</sup> Electronic Materials Conference, Duke University NC 2025
- PyCon US, Pittsburgh 2025
- The Franklin Institute Awards Symposium, Temple University, 2025
- SCAN Workshop, Temple University, 2019.
- APS March Meeting, 2023.
- APS March Meeting, 2024 (presented by advisor).

## References

### **Prof. Anderson Janotti**

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