Abhishek Chilampankunnel Prasannan

(Abhishek C P)

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Education

Ph.D. in Theoretical Condensed Matter Physics, Wayne State University, Detroit, MI — Anticipated by 04/2026

M.S. in Physics, Wayne State University, Detroit, MI — 2021 – 2023

M.Sc. in Physics, Mahatma Gandhi University, Kerala, India — 2018 – 2020

B.Sc. in Physics, Mahatma Gandhi University, Kerala, India — 2014 – 2017

Skills

Academic research | LaTeX typesetting and publishing | Python (Kwant, NumPy, SciPy) | Data visualization (Matplotlib) | Lecture delivery | Active learning strategies (peer instruction) | Lab facilitation | LMS-Canvas |

Teaching Experience

Teaching Assistant, Physics – Wayne State University, Detroit, MI — Aug 2021 – Dec 2025

- Physics for Lifescience I and II courses for non-majors: Led discussion sections and facilitated group activities for over 300 students.
- University Physics for Scientists/Engineers I and II for Physics/Engineering majors: Delivered lectures to introduce key concepts, followed by facilitating student engagement with worksheets and group activities for over 125 students.
- Checked assignments and exams, proctored tests, and provided grades according to university standards.
- Organized review sessions before exams, aiding students in identifying key areas of focus for optimal test preparation.

Lab Instructor, Physics – Wayne State University, Detroit, MI

- Physics for Lifescience I Laboratory and Descriptive Astronomy Laboratory courses: Facilitated laboratory sessions and maintained course materials, assignments, and grades through **Canvas**, ensuring smooth course management and effective communication with students.

Research Experience

Graduate Research Assistant, Group of Dr. Alex Matos-Abiague – Dept. of Physics and Astronomy , Wayne State University, Detroit, MI — Jan 2022 – July 2025

- Thesis: *Non-reciprocal effects in gated superconductor/semiconductor planar Josephson junctions*: Modeled and analyzed transport properties in two-dimensional semiconductors using Kwant, a **Python**-based package. Developed computational simulations to study the effects of spin-orbit coupling, magnetic fields, and other parameters on Josephson junction behavior.

Relevant courses

- **GS 7900: Introduction to College Teaching and Learning**, Wayne state Univeristy, MI, Explored principles of effective college-level teaching, including course design, assessment, and evidence-based pedagogy. Developed inclusive teaching strategies and tools to address diverse student populations.
- **Readings: Peer Instruction: A User's Manual** by Eric Manzur, focusing on active learning techniques and student engagement.

Publications

[1] Topological Superconductivity and Josephson Diode Effects on the Magnetocurrent-Phase Relation of Planar Josephson Junctions (to be submitted soon).

B. Pekerten, ***A. C. Prasannan***, B. Scharf, A. Matos-Abiague

[2] Crystalline Anisotropic Josephson Diode Effect (to be submitted soon).

A. C. Prasannan, B. Pekerten, A. Matos-Abiague

Awards and Presentations

- Recipient of **Summer Dissertation Award—2025**, Graduate school, Wayne state univeristy, Detroit, MI.

Oral Presentations

- ABC Seminar, ”Josephson Diode Effect in Gated Planar Josephson Junction”, Wayne State University, Detroit, MI, 02/20/2024.
- APS March Meeting 2024, "Superconducting diode effect in top-gated Josephson junctions", Minneapolis, MN, 03/08/2024
- 13th Graduate Research Day," Superconducting diode effect in top-gated Josephson junctions", Wayne State University, Detroit, MI, 04/18/2024.

Poster Presentations

- AVS Michigan Chapter Spring Symposium, "Superconducting diode effect in top-gated Josephson junctions", College of Engineering, Wayne State University, Detroit, MI, 05/05/2024
- 12th Graduate Research Day, " Superconducting diode effect in gated Josephson junctions", Department of Physics and Astronomy, Wayne State University, Detroit, MI, 04/20/2023

References