

# Nitin Jha

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## ABOUT ME

I am starting my second year as a Ph.D. student at Kennesaw State University. My research interests lie in the topics of Quantum Networks and Quantum Communication.

## WORK EXPERIENCE

06/01/2022 – 08/31/2022 Sonipat, India  
**RESEARCH ASSISTANT IN UNIVERSITY** ASHOKA UNIVERSITY (DEPARTMENT OF PHYSICS)

To simulate various micromagnetic systems using the MuMax3 or OOMMF, and analyse the given data to make relevant inferences about multiple systems of interest, **Permalloys** of different dimensions.

**Business or Sector** Professional, scientific and technical activities | **Department** Physics |

**Website** <https://www.ashoka.edu.in/departement/departement-of-physics/>

08/01/2023 – CURRENT Marietta, United States  
**GRADUATE RESEARCH ASSISTANT** KENNESAW STATE UNIVERSITY

I am working as a Graduate Research Assistant under Dr. Abhishek Parakh in the Department of Computer Science at the College of Computing and Software Engineering (CCSE). I work on studying several quantum communication protocols and their performance over different channel noises.

**Address** 1100 South Marietta Pkwy, 30060, Marietta, United States

## EDUCATION AND TRAINING

08/14/2023 – CURRENT Marietta, United States  
**PH.D. COMPUTER SCIENCE** Kennesaw State University

**Address** 1100 South Marietta Pkwy, 30060, Marietta, United States | **Website** <https://www.kennesaw.edu/>

08/10/2020 – 05/27/2023 Sonapat , India  
**BACHELORS OF SCIENCE IN PHYSICS (HONS) (CUM LAUDE)** Ashoka University

**Address** Ashoka University, Plot No.2 , Rajiv Gandhi Education City (India), 131029, Sonapat , India |

**Website** <https://www.ashoka.edu.in/> | **Field of study** Physics | **Final grade** 3.69/ 4.0

03/01/2018 – 06/16/2020 Jamshedpur, India  
**HIGH SCHOOL** D.A.V Public School

**Address** NIT Campus, Banta Nagar, Adityapur, Jamshedpur , 831014, Jamshedpur, India | **Website** <https://davitjsr.org/> |

**Field of study** Natural sciences, mathematics and statistics | **Final grade** 94.2 %

## LANGUAGE SKILLS

Mother tongue(s): **HINDI** | **ENGLISH** | **MAITHILI**

## ● DIGITAL SKILLS

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Matlab/Simulink | IBM-Q Experience and Qiskit (an open-source Quantum Computing framework)

### Data Collection and Analysis

Data Gathering, Data Processing, Data Visualization, Data Analysis | Latex: advanced user | Programming: C, Java, Apex, Python, OCaml, OpenGL | Academic writing and editing

### Compiling and Managing the Results

Microsoft Office, Microsoft Word, Microsoft Excel, Outlook, Facebook, Google | Basic graphic design - Canva | Laboratory Skills

## ● PUBLICATIONS

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2024

### [Effect of noise and topologies on multi-photon quantum protocols](#)

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This study goes over the performance of three-stage QKD protocol under several noise models and over different network topologies.

## ● CONFERENCES AND SEMINARS

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01/27/2024 – 02/01/2024 The Moscone Centre, San Francisco

### **SPIE Photonics West 2024**

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I presented my work titled "*Effects of noise and topologies on multi photon quantum protocols*" in the Quantum West 2024 Conference which comes under SPIE. Photonics West 2024.

Link <https://spie.org/conferences-and-exhibitions/photonics-west/attend#> =

## ● PROJECTS

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09/14/2023 – 01/01/2024

### **Analysing Multi-photon Quantum-Protocols**

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In this project, I simulated several Quantum Key Distribution (QKD) protocols such as three-stage, decoy-state, etc., over different topologies. I also implemented the multiphoton aspect of these protocols to estimate the change in performance for different network topologies.

01/15/2024 – 05/14/2024

### **Integrating Three-Stage QKD Protocol with Calderbank-Shor-Steane (CSS) Error Correction Code**

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This is a theoretical study that aims to integrate the CSS code with the three-stage QKD protocol to increase the overall efficiency and security of the protocol under the presence of several quantum noises. This is still an ongoing study and hasn't been concluded yet. (Currently in review at Scientific Reports)

01/2022 – 05/2022

### **The Dynamics of a Chaotic Pendulum**

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The project was done to explore the dynamics of a simple pendulum, and find the regimes of chaos by varying a particular parameter. The parameter that was varied for us was the amplitude of the driving force. The regions of chaos were identified using Bifurcation plots, and Poincaré sections. Further, the project also explored the presence of chaos as indicated by the Lyapunov exponent.

Link <https://github.com/ninjha252/Damped-Driven-Pendulum>