

# Devansh Kalluhole Matham

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## EDUCATION

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### CUNY–The City College of New York

*Masters in Science, Physics*

New York, NY  
*Expected May 2027*

### Texas Christian University (*Dean's Transfer Scholarship*)

*Bachelors in Science, Physics*  
*Mathematics Minor*

Fort Worth, TX  
*May 2025*

**Relevant Coursework** - Computational Physics, C++, Statistical Mechanics, Quantum Mechanics, Partial Differential Equations, Scientific Analysis & Modelling, Electrodynamics, Discrete Mathematics, Mathematical Proofs

## RESEARCH EXPERIENCE AND PROJECTS

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### Texas Christian University, Department of Physics and Astronomy

*Research Assistant - [Parallel Computing and ML in Biophysics](#)*

Fort Worth, TX  
*Apr 2025 - Present*

Advisor: Dr. Hana Dobrovolny

- Leveraged CUDA to harness NVIDIA GPU's to accelerate agent-based model (ABM) simulations of viral spread, reducing runtime significantly.
- Enhanced ABM's by integrating stochastic cell-to-cell fusion processes, advancing understanding of cellular dynamics in virus-host interactions.
- Implemented graph neural networks to study spatial heterogeneity of syncytial cells through analysis of topological features such as persistent homology.

### Raman Research Institute, Department of Light and Matter Physics

*Visiting Internship - [Data Analysis for Atomic Physics](#)*

Bangalore, India  
*Jun 2024 - Jul 2024*

Advisor: Dr. Saptarishi Chaudhuri

- Investigated the trapping of sodium and potassium atoms at ultra-cold temperatures using optical dipole traps and THORLABS equipment.
- Tested lasers through characterization of their physical properties using MATLAB to continue accurate experimentation, ensuring precise trapping performance for atoms.
- Utilized Python to extract image matrices of a laser beam to computationally assess the accuracy of a gaussian fitted spatial profile, and discovered a misalignment on the scale of millimeters.
- Aligned a proposed servo controller electronics system to stabilize the frequency of a trapping laser.

### Texas Christian University, Department of Physics and Astronomy

*Research Assistant - [Materials Science Characterization](#)*

Fort Worth, TX  
*Sep 2023 - Apr 2025*

Advisor: Dr. Yuri Strzhemechny

- Designed and implemented components for an ultrahigh vacuum (UHV) characterization chamber, enabling cathodoluminescence spectroscopy of nanomaterials.
- Studied nanosize crystals in zinc oxide and gallium oxide, and spearheaded a study of their preparation techniques.
- Conducted surface spectroscopy (Scanning Electron Microscopy, FTIR, Raman, PL) to analyze nanocrystalline oxides, enhancing preparation techniques for antibacterial applications.

## HONORS AND AWARDS

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- Best Undergraduate Poster at Texas Section APS Meeting, University of Houston, *May 2025*
- Outstanding Undergraduate Poster Award at Texas Section APS Meeting, Southern Methodist University, *October 2024*
- Best Physics Undergraduate Poster Presentation at TCU Student Research Symposium, *April 2024*
- Dean's Transfer Scholarship TCU, *May 2023 - \$50,000*

## WORK EXPERIENCE

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### Student Success Center

*Math Tutor*

Orange County, CA  
*Dec 2022 - May 2023*

- Led one-on-one appointments and group sessions for college calculus classes.
- Prepared revision material tailored to individual students, helping several first-generation college students transfer to 4-year universities.
- Completed a 10 week tutor specialist course and received certification.

## SKILLS AND TECHNOLOGIES

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**Skills:** Python, C++, CUDA, PyTorch, Git, LaTeX,

**Experimental Techniques:** SEM, FTIR, Raman, PL Spectroscopy, Cathodoluminescence, UHV Systems, Alkali lasers

**Languages:** English, Hindi, Kannada, Japanese