

Sai Sanjay Sudarsan

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RESEARCH AND EXPERIENCE

Open-ended experiment on Interferometry - A comparative analysis was conducted between a physical Mach-Zehnder Interferometer setup and a simulation of the same on Ansys Zemax OpticStudio. Additionally, an experiment to study interference in matter was built with water as the choice for matter and interference of sound waves was studied by constructing "directional sound lasers" using ultrasonic speakers and ICs.

Dissertation on Dark Matter - A completely theoretical study on quantum devices used to search for dark matter was done, focussing on Axions and similar dark matter candidates with masses below 30 eV.

EDUCATION

MSc. Particles, Strings and Cosmology **Durham University**

Jan 2026

Full-time degree on Particle Physics, including Cosmology and basics of String Theory.

Thesis: "Searching for Dark Matter using Quantum Devices"

Major Topics: Cosmology, Astroparticle Physics, Neutrino Physics, QCD, QED, Field Theory, General Relativity, Standard Model

BSc. (Hons.) Physics

Sri Sathya Sai Institute of Higher Learning (CGPA: 8.2)

Nov 2024

Full-time 3 year degree with major in Physics and minors in Mathematics, Chemistry and Language (English and Sanskrit).

Major Topics: Nuclear Physics, Thermal and Statistical Physics, Electronics - Analog and Digital, Computational Techniques, Quantum Mechanics, Optics, Mechanics and Electrodynamics, Solid State Physics, Atomic and Molecular Spectroscopy, 8085 Microprocessor

Microbachelors in Neuroscience **Harvard (Online)**

May 2025

Online course on the Fundamentals of Neuroscience offered by HarvardX.

WORK EXPERIENCE

Edumentors, United Kingdom

2025 – Present

Tutor (Remote)

Tutoring students for KS3, KS4, GCSE and A-level Science, Maths, and other associated subjects.

The Pallikoodam, India

2025 – Present

Course Moderator – NatyaClass (Remote)

Course Moderation for a batch-wise dance course based on the Natyashastra.

Tutor The Nation, United Kingdom

2024 – 2025

Tutor (Remote)

Tutored students for GCSE and A-level Science, Maths, and other associated subjects.

CERTIFICATIONS

- IELTS – 8.0 band
- Zemax OpticStudio – Department of Physics, IIT Hyderabad
 - A two-day workshop conducted on Ansys Zemax OpticStudio, a software used for Optical design and simulations.
- Developing Soft Skills and Personality – NPTEL

SKILLS

- Academic Writing, LaTeX
- Python Programming – NumPy, Matplotlib, SciPy, Pandas, PyAudio, Data Visualisation
- Microsoft Office Suite (Word, PowerPoint, Excel)
- General, Electronic and Optical Lab equipment including Thermal and Solid State Physics
- Spectroscopy, Interferometry, 8085, Semiconductor and Electromagnetism based experiments
- Computational Techniques like Non-linear Analysis, Gauss Elimination, Numerical Integration, ODEs, PDEs and Interpolation
- Values-Based Leadership

VOLUNTEERING

Tutor The Nation

Tutor

2024 – 2025

Sri Sathya Sai Vidya Vahini

Multimedia Content Creation

2011 – Present

Sri Sathya Sai Media Center

Multimedia Content Creation

2025 – Present

REFERENCES

Available upon request

OTHER INTERESTS

- Professional Indian Classical Musician
- Aspiring Indian Classical Dancer
- Multi-instrumentalist
- Combining Music and Physics

LANGUAGES KNOWN

- English (C2 Level)
- Tamil (Native)
- Hindi (Professional)
- Telugu (Limited)
- Japanese (Elementary)