

Sankara Sai Chaithanya, Rayudu

Department of Physics & Astronomy, University of New Mexico

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Education

University of New Mexico (Jan'21 - Present)

Ph.D. Candidate

Department of Physics & Astronomy,

Center for Quantum Information and Control (CQuIC)

Indian Institute of Technology (IIT), Madras (Aug'14 - May'19)

CGPA: 8.37/10

Dual degree (B.Tech & M.Tech)

Major: *Electrical Engineering*

Minor: *Physics*

Preprints, Publications and Talks

1. **Fermionic Independent Set and Laplacian of an independence complex are QMA-hard**, [arXiv:2411.03230](https://arxiv.org/abs/2411.03230).

Chaithanya Rayudu

- Accepted for a talk at Quantum Information Processing 2025 (**QIP 2025**) and Southwest Quantum Information and Technology 2024 (**SQuInT 2024**) conferences along with the below 'quantum generalizations of Vertex Cover' paper.

2. **Constrained local Hamiltonians: quantum generalizations of Vertex Cover**, [arxiv:2409.04433](https://arxiv.org/abs/2409.04433)

Ojas Parekh, Chaithanya Rayudu, Kevin Thompson

- Accepted for a talk at Quantum Information Processing 2025 (**QIP 2025**) and Southwest Quantum Information and Technology 2024 (**SQuInT 2024**) conferences along with the above 'Fermionic Independent Set' paper.
- Invited talk at Institute for Operations Research and the Management Sciences (**INFORMS**) 2024 Annual Meeting.
- Invited talk at **INFORMS** Optimization Society Conference 2024.

3. **An SU(2)-symmetric Semidefinite Programming Hierarchy for Quantum Max Cut**, [arxiv:2307.15688](https://arxiv.org/abs/2307.15688).

Jun Takahashi, Chaithanya Rayudu, Cunlu Zhou, Robbie King, Kevin Thompson, Ojas Parekh

- Accepted talk at Theory of Quantum Computation, Communication and Cryptography 2024 (**TQC 2024**) conference.

4. **Quantum Bicyclic Hyperbolic Codes**, [Quantum Inf Process 19, 228 \(2020\)](https://arxiv.org/abs/2007.14888)

Sankara Sai Chaithanya Rayudu, Pradeep Kiran Sarvepalli

Poster Presentations

1. Presented a poster on '*Application of SWAP-operator algebra for anti-ferromagnetic Heisenberg models via semi-definite programming*' at Adiabatic Quantum Computing (**AQC 2023**) conference.
2. Presented a poster on '*Transition Network Method for Stochastic Heisenberg Hamiltonians*' at Southwest Quantum Information and Technology 2022 (**SQuInT 2022**) workshop.
3. Presented a poster on '*Quantum Bicyclic Codes*' at Quantum Information Processing 2019 (**QIP 2019**) conference.

Teaching Experience

1. **CQuIC summer course on Optimization and Quantum Foundations** (Aug'24)

Co-taught a lecture on De Finetti theorems.

University of New Mexico

2. **Teaching Assistant** (Jan'21 - May'21)

Course: Algebra-based Physics Lab

University of New Mexico

3. **Teaching Assistant** (Aug'18 - Dec'18)

Course: Quantum Computing and Quantum Information

Instructor: Dr. Prabha Mandayam, IIT Madras

Work Experience

- *Software Engineer* at **Texas Instruments**, Bangalore (July'19 - Dec'20)

Designed and tested speaker protection and audio enhancement algorithms for micro-speakers. Developed firmware for low-power audio amplifiers.

Scholastic Achievements

- Ranked among the top 300 in the Indian National Physics Olympiad, Indian National Chemistry Olympiad, and Indian National Astronomy Olympiad in 2014.
- In the top 0.02 percentile of the one Million applicants of JEE Mains, 2014
- Ranked 288 among more than 126,000 applicants of JEE Advanced Exam 2014
- A two-year scholarship for high school by Bhashyam Educational Institute based on academic merit.