Curriculum vitae

Last updated: 20th of April, 2025

Full name: Virinchi Venkata Rallabhandi

Nationality: Australian

Current study: PhD in Mathematical Physics at the University of Edinburgh, 2022 - 2026 (expected finish), supervised by James Lucietti

Completed qualifications:

- Master of Advanced Study in Applied Mathematics from the University of Cambridge, i.e. Part III of the Mathematics Tripos, 2021 - 2022
- Master of Physics (theoretical physics stream) from the University of Western Australia (UWA), 2020 - 2021
- Bachelor of Science (Physics, Mathematics & statistics) from UWA, 2017 - 2019

Publications:

- Spinorial quasilocal mass for spacetimes with negative cosmological constant (2025) - available at arXiv[gr-qc/2504.11971]

Academic achievements:

- Equal 9th (3rd in Australia) in the pairs division (with Alexander Rohl) of the 2017 *Simon Marais Mathematics Competition* (an Asia-Pacific wide undergraduate maths competition modelled on the Putnam competition)
- Came 3rd, 1st and 3rd respectively in the 2017, 2018 and 2019 *Blakers Mathematics Competition* (a Western Australia wide undergraduate maths competition)
- Winner of the 2021 *Muriel and Colin Ramm Prize and Medal* (for the highest scoring student in the Master of Physics at UWA)
- Joint winner (with Jesse Schelfhout) of the 2019 *John de Laeter Medal* (for the highest scoring 3rd year undergraduate physics student at a Western Australian university)
- Winner of the 2019 *Ken Freeman Prize in Astrophysics and Space Science* (for highest score in the unit, PHYS3003, at UWA)
- Winner of the 2019 *Lance Maschmedt Physics Prize* (for highest average score across the units PHYS3001 ("*quantum mechanics and atomic physics*"), PHYS3002 ("*electrodynamics and relativity*"), PHYS3011 ("*mathematical physics*") and PHYS3012 ("*frontiers in modern physics*") at UWA)

- Winner of the 2017 *Lady James Prize in Science* (for the highest score across the 1st year physics or chemistry units at UWA)

Academic experience:

- My PhD studies focus broadly on mathematical topics in general relativity. The bulk of my work so far has been concentrated on the theme of positive energy theorems and quasilocal mass. Most notably, I have developed a new notion of quasilocal mass for spacetimes with negative cosmological constant and proved it satisfies a number of physically desirable properties.

- My Cambridge master's program was entirely composed of coursework. I sat exams in general relativity, quantum field theory, differential geometry, black holes, advanced quantum field theory and string theory. Although I didn't sit exams in them, the courses I took also included symmetries, particles & fields, algebraic topology and supersymmetry.

- My UWA master's program was evenly split between coursework and research. My final thesis was titled "*Higher symmetries of relativistic wave equations in curved spacetime*." While the physical interest for studying this problem came from the parallels between the algebra of higher symmetries and higher spin algebras, my thesis was primarliy concerned with the techniques of differential geometry and differential equations used to solve the problem at hand. My thesis particularly emphasized spinor methods in computing higher symmetries.

- During the 2018/2019 summer holidays, I was one of eight students selected to participate in a ten week research internship at the International Centre for Radio Astronomy Research (ICRAR) - a collaboration between physics departments at UWA and Curtin University.

Employment:

- During my PhD, I have been employed by the University of Edinburgh as a tutor for the courses, "*proofs and problem solving*," "*several variable calculus and differential equations*," "*fundamentals of pure mathematics*," "*honours analysis*," "*honours differential equations*" and "*topics in mathematical physics A* [focused on black holes]," at various times.

- Between March 2020 and June 2021, I was employed by UWA to work as tutor for the first year maths unit, "*mathematical theory and methods*."

- I was employed as a tutor for the 2021 Western Australian Mathematics Summer School (WAMSS). WAMSS is a week long residential school for promising final year secondary school students, aiming to introduce them to interesting areas of maths - e.g. number theory - which they wouldn't otherwise be able to access at school.

Funding:

- School of Mathematics Studentship - for my PhD at Edinburgh

- Part III International Scholarship - for my master's at Cambridge

- Muriel and Colin Ramm Postgraduate Scholarship in Physics - for my master's at UWA

Miscellaneous:

- Member of the Australian Labor Party

- Member of the Australian Republic Movement

- Life member of the Cambridge Union Society

- Long time tuba player