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On the renormalization of random network models

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Curriculum Vitae

Alessio Catanzaro was born on June 19th 1995 in Bologna, Italy. He grew up there, where he attended the High School Luigi Galvani and obtained his International Scientific diploma in 2014.

He chose to study Physics at the Alma Mater Studiorum - Università of Bologna, but he was also lucky enough to be selected in the merits program of the University, the Collegio Superiore, where he first heard about network science. He obtained a Bachelor of Science in Physics in 2017, with a thesis on spectra of Random Matrices and their application to random walks, under the supervision of prof. A. Bazzani. Being fascinated by theoretical aspects of the field of physics, he obtained his Master of Sciences in Theoretical Physics with a thesis on the self-similarities properties of random networks, again under the supervision of prof. A. Bazzani, awarded by Bologna University in 2020, a few weeks into the pandemics lockdown.

In September 2020 he was admitted to the PhD program in System Science, track in Economics, Networks and Business Analytics at the IMT School for Advanced Studies in Lucca. There he joined the Networks research unit, under the supervision of prof. D. Garlaschelli, and started investigating scale invariant aspects of random network models. In 2022 he moved to the Lorentz Institute at Leiden University, where he started a double PhD program in theoretical physics about renormalization on random networks under the co-supervision of prof. S. P. Patil. He also worked closely with the Mathematical Institute, mainly with prof. R. S. Hazra, on the spectral properties of certain scale-invariant network models.

In 2024 he also started a junior research contract at the University of Palermo, under prof. R. Mantegna and prof. V. Latora, on the neuro-scientific aspects of higher-order interactions in coupled dynamical systems, under the framework of the PNRR-funded NeuNet project.

In 2026 he has been a visiting researcher at the Universidade Federal do Ceará, in Fortaleza, Brasil.

He attended several conferences, workshops and schools during his PhD trajectory. Among these, he got the chance to present his work in Italy, France, the Netherlands, India and Brazil.