



Politecnico
di Torino
SmartData@PoliTO



May 20th, 2024, 5:00 PM CEST

SmartTalk: Covivio, Sala Piccola

<https://smartdata.polito.it/category/smarttalks/>



Marco Nurisso

Marco Nurisso is a Ph.D. student in Pure and Applied Mathematics at Politecnico di Torino and member of CENTAI Institute. He received the Bachelor degree in Mathematics for Engineering in 2020 and the Master in Mathematical Engineering at Politecnico di Torino in 2022. His research interests lie in the field of applied topology and geometry, with a focus on their intersections with artificial intelligence and complex systems.

Higher-order Laplacian renormalization

ABSTRACT

The renormalization group (RG) is a pillar of the theory of scaling, scale-invariance, and universality in physics. An RG scheme based on diffusion dynamics was recently introduced for complex networks with dyadic interactions, allowing the possibility of coarse-graining networks according to their diffusion properties. We propose a general RG scheme for higher-order networks. Our approach uses a diffusion process to group general hyperedges, according to diffusion processes.

We demonstrate our approach on controlled synthetic higher-order systems and then use it to detect the presence of order-specific scale-invariant profiles of real-world complex systems from multiple domains.



Season 4