



UCL Undergraduate Mathematics Colloquium

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Date: 18th March 2026, Time: 3-4pm

Location: Room LG17, Bentham House, Endsleigh Gardens

Graphical Linear Algebra

Speaker: Professor Fabio Zanasi (UCL)

Abstract: Linear algebra is often presented as a language of matrices and symbolic manipulations. Yet in many domains - from signal processing to control theory and quantum computing - the systems we study are naturally understood as networks of interacting components. In recent years, graphical linear algebra has emerged as an increasingly popular diagrammatic language that makes the compositional structure underpinning linear algebra explicit. Instead of manipulating arrays of numbers, we reason with diagrams made of wires and nodes that represent linear operations such as copying, adding, and scalar multiplication.

Graphical linear algebra is rooted in ideas from category theory, where string diagrams describe how mathematical structures compose in a symmetric monoidal category. In this talk I will briefly introduce graphical linear algebra, the categorical perspective behind it, and mention some recent and ongoing applications, including work on quantum processes, signal flow systems, and compositional approaches to complex networks.

Colloquium Website

