A GRAPHICAL CALCULUS FOR LINEAR CATEGORIES

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Based on the linear-nonlinear adjunctions between symmetric monoidal and cartesian categories, linear categories connect the two worlds of linear and nonlinear maps in a canonical way. They arise in various branches of mathematics and constitute the categorical counterpart of intuitionistic linear logic. In the literature of monoidal categories and linear logic, geometric or graphical methods have been extensively used for nearly 40 years, but out of reach of linear categories. As a result, it remains nontrivial to reason about linear categories. In this talk, I present my recent solution to this long-standing problem–a novel graphical calculus that forms an initial linear category–and illustrate its applications in category theory.