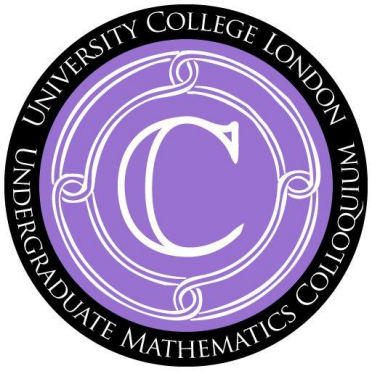

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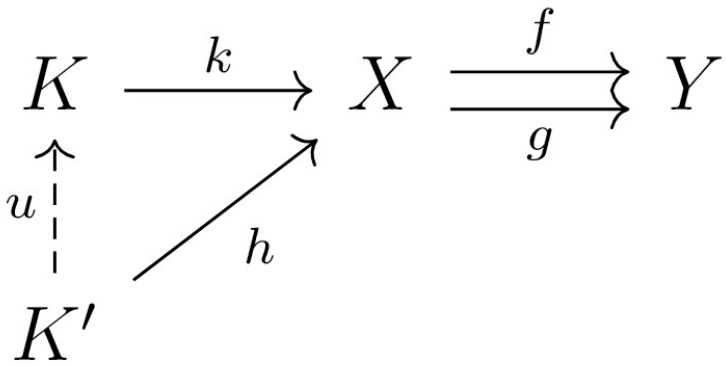
An Introduction to Category Theory and Categorical Limits

3rd December 2025

Abstract: Throughout mathematics, one encounters countless examples of "sets with extra structure": the familiar algebraic structures with their operations, orders with their binary relations, metric spaces with their metrics, topological spaces with their open sets, and so on. They also come with a natural notion of "structure-preserving maps" between them: homomorphisms which preserve operations, monotone maps which preserve the order, isometries which preserve distance, continuous maps which preserve connectedness, and so on. The basic motivation of category theory is to build a coherent language for describing these familiar phenomena.

In this talk, we introduce and give examples of some of the elementary notions of category theory such as categories, functors, natural transformations, commutative diagrams, and duality, with the ultimate goal of building up towards the notion of a (co)limit, which takes many familiar forms: (co)products, (co)kernels, null objects, and so on.



Speaker: **Bryan Lam**

Location: Room 105, 24 Gordon Square

Time: **1.30-2.30pm**