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MATEMATİK BÖLÜMÜ

Associativity is All You Need: An Excursion into Operadic Landscape

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There is a unified framework to study any algebraic structure from a homological/homotopical point of view. The framework relies on structures called "operad"s, or more generally "PROP"s. I'll start with simplest algebraic structure (a binary operation with no other assumptions) and gradually will work my way upto associative, unital associative, unital commutative associative, and to Lie and Leibniz algebras from there. Along the way, I will describe how one can endow any algebraic structure with a homotopy theory and how one can define the correct homotopy of an algebraic structure universally without appealing to any ad-hoc chain complexes. I will show that this universal homotopy theory relies on the fact that all operadic structures are indeed associative on a meta-level.

Tarih: 16 Nisan 2025 Çarşamba

Saat: 14:30-15:30

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