

Topological clones

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Every algebra $(A; (f_i)_{i \in I})$ carries, in addition to its algebraic structure, a natural topological structure: this structure is given by the topology of pointwise convergence on its term functions. Topological clones are the abstract algebraic and topological objects which capture both the algebraic and topological structure of algebras, similarly to topological groups which appear as the algebraic and topological abstraction of permutation groups.

In this lecture I am going to explain what we can tell about an algebra from its topological clone. This will lead me in particular into complexity theory, where certain computational problems, called Constraint Satisfaction Problems, are investigated systematically via their polymorphism algebras, and subsequently via topological clones. I will moreover address the often non-trivial interference between the algebraic and the topological structure of algebras.

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