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## Categories, coalgebras and Hopf algebras defined from logical structures

**Abstract.** Algebraic logic seeks to codify (or replace) logical connectives and quantifiers by algebraic operators. But there are connections between algebra and logic in the other direction too, by virtue of associating algebraic structures to logical theories. These structures serve as “invariants of theories” and can shed light on the underlying logic or motivate new questions. In this talk, I’ll touch on

- The category of models of universal first order theories and its interaction with Ramsey theory
- The Burnside-Schanuel semiring of the category of definable sets and functions
- The incidence coalgebra and Hopf algebra associated to finite models of suitable theories.

Some of these (co)algebras, especially those associated to graphs, trees and words have been intensely investigated by algebraic combinatorists since the 90’s. One of the aims of this talk is to advertise these structures and explain how to define them in a broader context.