

Dirk Hofmann *
CIDMA, University of Aveiro

Limits in categories of Vietoris coalgebras

In this talk we consider categories of coalgebras whose underlying functor is a Vietoris polynomial one — intuitively, the topological analogue of a Kripke polynomial functor on **Set**. Firstly, we study completeness properties of these categories by a careful analysis of the behaviour of Vietoris functors with respect to certain mono-cones and codirected limits. Among other results, we prove that every Vietoris polynomial functor admits a final coalgebra if it respects certain conditions concerning separation axioms and compactness. When the functor is restricted to some of the categories induced by these conditions the resulting categories of coalgebras are even complete. Another approach uses duality theory: for the Vietoris functor on the category of (ordered) compact Hausdorff spaces and (monotone) continuous maps, we describe the dual of the category of coalgebras as a \aleph_1 -ary quasivariety.

Parts of this talk are based on [1, 2].

REFERENCES:

- [1] Dirk Hofmann, Renato Neves, and Pedro Nora, Limits in Categories of Vietoris Coalgebras, Technical report, [arXiv:1612.03318](#) [cs.LG].
- [2] Dirk Hofmann, Renato Neves, and Pedro Nora, Generating the algebraic theory of $C(X)$: the case of partially ordered compact spaces, *Theory and Applications of Categories*, 33(12) (2018) 276–295.

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