Doubly-infinitary distributive categories

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Abstract.

A common question in category theory is how limits and colimits interact with each other. One of the most benign kinds of interaction is that of a *(pseudo)distributive law*; for instance, finitary and infinitary *distributive categories* [1], and *completely distributive categories* [4].

In [3], we explore the realm of categories with products and coproducts, featuring a distributive law between them, which we term doubly-infinitary distributive categories. This notion serves as an intermediary between infinitary distributive categories and completely distributive ones.

We show various instances of doubly-infinitary distributive categories aiming for a comparative analysis with established notions such as extensivity, infinitary distributiveness, and cartesian closedness. Our exploration reveals that this condition represents a substantial extension beyond the classical understanding of infinitary distributive categories. We also remark that free doubly-infinitary distributive categories are cartesian closed.

In this talk, we intend to address some of these insights. The talk is mostly based on [2, 3] and ongoing work.

References

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