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A study of Penon weak n -categories. I: Monad interleaving. (English. French summary)

Zbl 1405.18003

Cah. Topol. Géom. Différ. Catég. 59, No. 3, 197-259 (2018).

This paper aims at giving a new construction of the monad used by *J. Penon* [Cah. Topologie Géom. Différ. Catégoriques 40, No. 1, 31–80 (1999; Zbl 0918.18006)] for weak n -categories by introducing a “magma structure” and a “contraction structure” with recourse to monad interleaving. *E. Cheng* [J. Pure Appl. Algebra 214, No. 6, 809–821 (2010; Zbl 1227.18006)] used monad interleaving to construct *T. Leinster*’s [Theory Appl. Categ. 10, 1–70 (2002; Zbl 0987.18007)] globular operad for weak ω -categories, which has undoubtedly inspired the author in this work. This paper is the first of a bilogy, the second of which is devoted to comparison between an algebraic definition and a non-algebraic one of weak n -category. The bilogy stems from the author’s PhD thesis [“Comparing algebraic and non-algebraic foundations of n -category theory”, [arXiv:1405.7263](https://arxiv.org/abs/1405.7263)].

Reviewer: [Hirokazu Nishimura \(Tsukuba\)](#)

MSC:

18A40 Adjoint functors

18C15 Triples, algebras for a triple, homology and derived functors for triples

18D05 Double categories, 2-categories, bicategories and generalizations

18D50 Operads

Cited in 1 Review

Keywords:

n -category; higher-dimensional category; monad interleaving; operad

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