No-iteration transitions and no-iteration distributive laws for pseudomonads

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Abstract.

The distributive laws for monads were introduced by J. Beck in [Beck, 1969], then years later these ideas were extended to high dimensional categories. F. Marmolejo defined a distributive law between pseudomonads in [Marmolejo, 1999] and the four 2–cells requested in this definition (two triangles and two pentagons) are subject to nine coherence conditions.

A few years later in the thesis [Tanaka, 2005], an extra coherence condition apart from the nine described in the paper of F. Marmolejo was given, but in [Marmolejo and Wood, 2008], F. Marmolejo and R. Wood showed that the extra condition in the thesis is superfluous as well as one of the original nine coherence conditions. In this paper, they defined a transition between pseudomonads and proved that the transitions and liftings are essentially the same.

R.F.C. Walters in his doctoral dissertation [Walters, 1970], gave us a no-iteration presentation of a monad and its algebras and with these ideas of no-iteration F. Marmolejo and R. Wood rewrote the distributive laws for monads in [Marmolejo and Wood, 2010] and extended the notion of no-iteration monads and their algebras to higher dimensional categories in [Marmolejo and Wood, 2013].

The natural continuation for these ideas is to give a definition of a no-iteretion transition and a no-iteration distributive law between pseudomonads and prove that these are essentially the same as the usual definitions (this is done in my Ph.D. thsesis). In this talk we will cover these definitions and also the proofs.

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