

Semistrict Tamsamani n -groupoids and connected n -types

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A very important and non-trivial problem in higher category theory is that of finding coherence theorems for weak higher categorical structures. Broadly speaking, one way to formulate a coherence theorem for a weak higher categorical structure consists in saying that it is, in a suitable sense, equivalent to one in which some of the associativity and identity laws hold strictly. These structures are often called “semistrict”.

The fundamental information carried by a weak n -groupoid is its homotopy type. In low dimension, it is known that strict 2-groupoids model 2-types and Gray groupoids model 3-types. These low dimensional results had lead several people to formulate the *semistrictification hypothesis* for homotopy types: In every model of weak n -category, a weak n -groupoid should be suitably equivalent to a semistrict one.

In this talk we illustrate a semistrictification result in the higher groupoid case, valid for any n , relative to the model of weak higher category developed by Tamsamani. Our main result states that every Tamsamani’s weak n -groupoid representing a connected n -type is in a suitable sense equivalent to a semistrict one. Our semistrictification theorem is the result of a comparison between cat^n -groups and Tamsamani’s model for the path-connected case.

REFERENCES

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