
DORETTE PRONK, Dalhousie University

Weakly globular double categories

In this talk I will introduce weakly globular double categories. They form a version of weak 2-categories in which the globularity condition, rather than the unit or associativity axioms, has been relaxed: instead of having a set of objects these weak 2-categories have a category of objects which is weakly equivalent to a discrete category. This is formalized by considering the category of objects as the vertical arrow category in a (strict) double category. There are two ways of adding arrows and 2-cells to construct a 2-category of weakly globular double categories, one of which gives a 2-category which is biequivalent to the 2-category of bicategories with pseudo-morphisms and icons.

If there is enough time I will show some illustrate some of the features of this notion of weak 2-category by giving the construction of the weakly globular double category of fractions for a category with a chosen class of arrows. This weakly globular double category of fractions has a universal property with respect to both 2-category structures for weakly globular double categories. Furthermore, it has the property that it is locally small, in the sense that it has horizontal and vertical hom-sets and sets of double cells with given domains and codomains. This is important when considering its classifying space for instance.

This is joint work with Simona Paoli.