Poster

IV Seminar on Categories and Applications

Bellaterra, 6 to 9 of June of 2007

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Categorical models for proper 2-types

The study and classification of non compact manifolds can be done in same cases by using proper homotopy invariants. In this poster we present a study of algebraic models for proper 2-types using two kinds of categorical groups induced by the space of non negative integer numbers and the space of non negative real numbers, respectively. Firstly we construct these algebraic models and the corresponding versions for higher dimensions and give a long exact sequence that contains some relations between these categorical groups associated to a space with a base ray. The aim of our work is to find out the additional algebraic structure of these categorical groups which is necessary to obtain algebraic models for proper 2-types.

References:

[1] J. García Calcines, M. García Pinillos, L.J. Hernández, Closed model categories structures for exterior and proper homotopy, Appl. Cat. Struct. (2004) 225-246.

[2] A. R. Garzón, J. G. Miranda, A. Del Río, Tensor structures on homotopy groupoids of topological spaces, International Mathematical Journal 2, 2002, pp. 407-431.

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Homological characterization of nilpotent multiplicative Lie Rings

A multiplicative Lie ring is a group with a binary function that satisfies a non commutative version of usual axioms of Lie commutator. We define an homology theory of multiplicative Lie rings by cotriple homology [1]. A five term exact sequence with the homology groups in low dimensions is obtained.
We also derive the homological characterization of the nilpotent multiplicative Lie rings by extending Stammbach and Stallings theorems of groups.

References:

[1] M. Barr, J. Beck, *Homology and standard constructions*. Lecture Notes in Math. 80, 245–335, Springer, 1969.

[2] U. Stammbach, *Homology in Group Theory*. Lecture Notes in Math. 359, Springer, 1973.

[3] J. Stallings, *Homology and central series of groups*. J. Algebra 2 (1965) 170–181.

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