Short Communications
IV Seminar on Categories and Applications
Bellaterra, 6 to 9 of June of 2007

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Equivariant homotopy theory for orbifolds

(Joint work with Laura Scull, University of British Columbia.)
An orbifold is representable when it can be obtained as the quotient of a manifold by the action of a compact Lie group. When we have such a presentation, we can use equivariant Bredon cohomology to define orbifold Bredon cohomology. Adem and Ruan have shown, using twisted K-theory, that this doesn't depend on the choice of the global quotient presentation, for the case of Bredon cohomology with K-theory coefficients over the rationals.
We will give a definition of orbifold Bredon cohomology with arbitrary coefficients and show that this is invariant under Morita equivalence, so that it doesn't depend on the presentation chosen, but is truly an intrinsic invariant of the orbifold itself. We will do this by considering the bicategory of representable orbifolds with generalized maps and showing that all maps and natural transformations in this bicategory can be expressed in terms of translations groupoids and equivariant morphisms between them.

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