ID de Contribution: **1** Type: **Exposé de recherche sur invitation**

3-dimensional HQFTs

mercredi 22 octobre 2014 11:40 (50 minutes)

Homotopy quantum field theory (HQFT) is a branch of quantum topology concerned with maps from manifolds to a fixed target space. The aim is to define and to study homotopy invariants of such maps using methods of quantum topology. I will focus on 3-dimensional HQFTs with target an Eilenberg-MacLane space K(G,1) where G is a discrete group. (The case G=1 corresponds to more familiar 3-dimensional TQFTs.) These HQFTs provide numerical invariants of principal G-bundles over closed 3-manifolds which can be viewed as "quantum" characteristic numbers. To construct such HQFTs, the relevant algebraic ingredients are G-graded categories, which are monoidal categories whose objects have a multiplicative G-grading.

Mots Clés / Keywords

TQFTs, HQFTs, graded categories

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Classification de thématique: TopAlg