Hopf25

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Monoidal categories graded by crossed modules

I will introduce the notion of a monoidal category graded by a crossed module $\chi : E \to H$. In such a category, the objects have a degree in H and the morphisms have a degree in E (which are related via χ). The motivation for the introduction of χ-graded monoidal categories is that they are useful to construct 3-dimensional homotopy field theories with target the classifying space of the crossed module χ (which is a homotopy 2-type). I will also introduce Hopf χ-(co)algebras, which generalize Hopf algebras and Hopf group-(co)algebras and whose categories of representations are χ-graded monoidal.