Grassmann-Hopf algebroid categories and Grassmann categories

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Grassmann-Hopf Algebroid Categories and Grassmann Categories

Definition 0.1. The categories whose objects are either *Grassmann-Hopf al/gebras*, or in general $G - H$ algebroids, and whose morphisms are $G - H$ *homomorphisms* are called *Grassmann-Hopf Algebroid Categories.*

Although carrying a similar name, a quite different type of Grassmann categories have been introduced previously:

Definition 0.2. *Grassmann Categories* (as in [**?**]) are defined *on k letters over nontrivial abelian categories* $\mathcal{A}$ as *full subcategories* of the categories $F_{\mathcal{A}}(x_1, ..., x_k)$ consisting of diagrams satisfying the relations: $x_i x_j + x_j x_i = 0$ and $x_i x_i = 0$ with additional conditions on coadjoints, coproducts and morphisms.

They were shown to be equivalent to the category of right modules over the endomorphism ring of the coadjoint $S(R)$ which is isomorphic to the Grassmann–or exterior–ring over R on k letters $E_R(X_1, ..., X_N)$.

References

[1] Barry Mitchell.*Theory of Categories.*, Academic Press: New York and London.(1965), pp. 220-221.

[2] B. Fauser: *A treatise on quantum Clifford Algebras.* Konstanz, Habilitationsschrift. (PDF at arXiv.math.QA/0202059).(2002).

[3] B. Fauser: Grade Free product Formulae from Grassmann–Hopf Gebras., Ch. 18 in R. Ablamowicz, Ed., *Clifford Algebras: Applications to Mathematics, Physics and Engineering*, Birkhäuser: Boston, Basel and Berlin, (2004).

[4] I.C. Baianu, R. Brown J.F. Glazebrook, and G. Georgescu, Towards Quantum Non-Abelian Algebraic Topology. *in preparation*, (2008).