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Joost Vercruyse*, ULB - Departement de Mathématiques - CP216, Campus de la Plaine, Boulevard du Triomphe, B-1050 Brussels, Belgium. *The Hopf algebroid associated to the partial representations of a Hopf algebra.*

When studying the symmetries of an object X , one sometimes prefers to permit some of these symmetries to act not “globally” (i.e. as a bijection on X), but just “partially” (i.e. as a bijection from a part of X to another part of X). This has led to the notions of partial actions and representations of groups. These in turn motivated the study of partial actions (“module algebras”) and coactions (“comodule algebras”) of Hopf algebras. There are remarkable similarities with the theory of weak Hopf algebras.

We will introduce partial representations, or “partial modules”, for a Hopf algebra H . It turns out that the category of partial modules is a monoidal category that coincides with the category of modules over a newly constructed Hopf algebroid H_{par} , which indicates another similarity with weak Hopf algebra theory. An algebra in this monoidal category is precisely a partial action over the Hopf algebra H . Different to the weak case and the case of partial representations of groups, the constructed Hopf algebroid H_{par} can however be infinite dimensional if the initial Hopf algebra H is finite dimensional.

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