

Partial modules and comodules over Hopf algebras

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Abstact

It often happens that an object has disappointingly few global symmetries, while parts of it are highly symmetrical. For instance, the symmetry group of the Atomium is isomorphic to that of a cube, but this ignores the fact that each of the vertices is a nice sphere. The Atomium has a lot more partial symmetries which act only on part of the Atomium. Indeed, by ignoring the escalator shafts, we see that every symmetry of the sphere defines a partial symmetry of the Atomium.

Given a Hopf algebra H , it is expected that the category of partial modules reveals more information about the algebra than the category of global modules. This category is isomorphic to the category of global modules over another algebra, the ‘partial Hopf algebra’.

In this talk, we will also consider the dual notion: partial comodules. Unlike partial modules, these are more difficult to interpret as objects we already know. In general the category of partial comodules over H is not equivalent to a category of comodules over a coalgebra.