

1025-18-171

**J. Scott Carter\*** ([carter@jaguar1.usouthal.edu](mailto:carter@jaguar1.usouthal.edu)), Department of Mathematics and Statistics, ILB 325, Mobile, AL 36688, and **Alissa S. Crans**, **Mohamed Elhamdadi**, **Pedro Lopes** and **Masahico Saito**. *Cohomology in a symmetric monoidal category that has products and coproducts.*

There is an abelian symmetric monoidal category whose object set is generated by one element and whose morphisms are generated by binary operations and co-binary operations. Various quotients of this category can be used to diagrammatically represent algebras, coalgebras, lie algebras etc. A diagrammatic interpretation of Gerstenhaber and Schack's deformation theory results. The key idea is that any associative law (such as associativity, self distributivity, Jacobi identity, Moufang identities), can be used to give differentials in a cohomology theory. Moreover, there is a simple graphical method to see that the square of the differential is zero.

These ideas are used to demonstrate that cocycles in the quandle theory and the Lie Algebra theory are cocycles in the composite theory. Also we discuss cohomology in certain Hopf algebras. (Received January 22, 2007)