Hopf25

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Fundamental Theorem of (A, g, H)-comodules

Let k be a field, H a Hopf algebra with a bijective antipode, $\mathcal{G}$ an H-comodule Lie algebra and A a commutative $(\mathcal{G}, H)$-comodule algebra. We assume that there is an H-colinear algebra map from H to $A^{\mathcal{G}}$. We generalize the Fundamental Theorem of (A, H)-Hopf modules to $(A, \mathcal{G}, H)$-comodules, and we deduce relative projectivity in the category of $(A, \mathcal{G}, H)$-comodules. In many applications, A could be a commutative G-graded $\mathcal{G}$-module algebra, where G is an abelian group and $\mathcal{G}$ is a G-graded Lie algebra; or a rational $(\mathcal{G}, G)$-module algebra, where G is an affine algebraic group and $\mathcal{G}$ is a rational G-module Lie algebra.