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**Forest Fisher\*** ([fdf28@email.vccs.edu](mailto:fdf28@email.vccs.edu)), 6901 Sudley Road, Manassas, VA 20109-2399. *A Rigidity theorem for connected, cocommutative Hopf monoids.* Preliminary report.

A Hopf algebra is coZinbiel whenever its coproduct can be written as the sum of two non-coassociative coproducts satisfying certain compatibility conditions. Aguiar and Mahajan have shown that connected, cocommutative Hopf monoids give rise to a family of Hopf algebras which are always (i) free as algebras and (ii) coZinbiel. We use these two properties to prove a rigidity theorem for all such Hopf algebras. In particular, we define a sequence of endomorphisms  ${}_1\beta, {}_2\beta, {}_3\beta, \dots$  that map into the subspace of primitive elements and are intimately related to the Dynkin idempotent. We will show that the map  ${}_1\beta$  projects onto the subspace of “total primitives” and provides a set of generators for the free Lie algebra of primitive elements. (Received June 28, 2011)