1006-55-160   **Terrence P. Bisson*** (`bisson@canisius.edu`), Canisius College, 2001 Main St., Buffalo, NY 14208, and **André Joyal**. *Additive and multiplicative Q-ring operations on H_*BO_*.*

The mod 2 homology of an E_∞-space is a bialgebra, acted on by Dyer-Lashof operations in addition to Steenrod operations. The whole algebraic structure including the Nishida relations can be described conveniently by using formal power series identities involving Kudo-Araki operations. This is done with the theory of Q-rings and Q-biagebras. Here we consider the mod 2 homology of an E_∞-rig space (where a rig is a "ring without negatives"). Its homology is a ring object in the category of cocommutative coalgebras. It is acted on by additive and multiplicative Dyer-Lashof operations in addition to the Steenrod operations. The whole algebraic structure including the mixed Adem relations and the mixed Cartan formula can be described conveniently by using formal power series identities involving the Kudo-Araki operations as in the theory of Q-rings. We give an explicit example with the homology of BO_*, the classifying space of real vector bundles. The E_∞-rig structure on BO_* is defined by Whitney sum and tensor product of bundles. (Received February 15, 2005)