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Eric Peterson* (epeters3@uiuc.edu), 704 W Elm St Apt 11, Urbana, IL 61801, **Adam Hughes**, Urbana, 61801, and **JohnMark Lau** and **Matthew Ando**. *Additive and multiplicative cocycles and Singer's calculation of the (co)homology of $BU\langle 2k \rangle$.*

Singer calculated the cohomology of $H_*BU\langle 2k \rangle$ for all k . We report on recent work to understand the functor represented by these Hopf algebras. The homology of $BU\langle 2k \rangle$ receives a map from the ring representing "symmetric multiplicative two-cocycles in k variables." For $k \leq 3$, Ando, Hopkins, and Strickland showed that this map is an isomorphism. For $k > 3$, it is not known how far this map is from being an isomorphism. Recently Hughes, Lau, and Peterson have calculated completely the ring representing symmetric *additive* two-cocycles in k variables *for all k* . This surjects onto the "tangent space" of the ring of multiplicative cocycles, and is the first serious step in understanding the relationship between multiplicative cocycles and $BU\langle 2k \rangle$ for $k > 3$. We will summarize the work of Ando-Hopkins-Strickland and present the calculation of Hughes, Lau, and Peterson. (Received August 07, 2008)