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Sean M Tilson* (stilson@kth.se). *Power Operations and Commutative Ring Spectra.*

We will compute the action of the Dyer-Lashof algebra on relative smash products using the multiplicative structure of the Künneth spectral sequence. We will then interpret such operations in terms of different possible E_∞ -structures. We will end with an application of these computations to give a non-existence result for E_∞ -complex orientations of certain ring spectra. (Received September 17, 2013)