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831 East Third Street, Bloomington, IN 47405. *Structured Orientations of Thom Spectra.*

Given a map of ring spectra out of the complex cobordism spectrum MU , we can ask whether it may be represented by an E_n map. For a complex oriented ring spectrum E , ring maps from MU to E have been described by Quillen. When the target E is an E -infinity ring spectrum and in particular MU , E_n maps live in the unit spectrum cohomology of a cover of the classifying space BU . For E_2 or E_4 ring maps this cohomology is readily computable and demonstrates every self ring map of MU is E_2 . This shows the Brown-Peterson spectrum BP is E_2 . (Received August 30, 2011)