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**Yifei Zhu\*** ([zyf@math.northwestern.edu](mailto:zyf@math.northwestern.edu)). *Power operation calculations in elliptic cohomology.*

One question in homotopy theory is to construct and compute stable power operations on elliptic cohomology theories. As a particular instance, for  $E$  a Morava  $E$ -theory spectrum of height 2, its algebra of power operations has the structure of a graded twisted bialgebra satisfying a Frobenius congruence. For the  $K(1)$ -localization of  $E$ , its algebra of power operations has a single generator over the coefficient ring. We illustrate this structure and provide explicit formulas by doing calculations, at the prime 3, with moduli of elliptic curves. (Received September 14, 2013)