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Eddie Santiago Beck* (eddie.beck@gmail.com), Department of Mathematics, University of Georgia, Athens, GA 30602. *On Calculations of p -Typical Formal Group Laws.*

Formal group law theory provides computational tools with which to explore algebraic topology and homotopy theory. This paper studies the formal sum and the cyclic power operation for p -typical formal group laws, specifically to reduce prohibitive computation times through algorithm and time complexity analysis. We provide a combinatorial algorithm that directly computes terms of arbitrary degree using Mahler partitions. We also provide an online algorithm for computing the cyclic power operation, meaning that the precision of the calculations can be increased without restarting the computations. We measured the time complexity by counting the number of monomial multiplications required. These algorithms are at worst sub-exponential on the degree of the precision. Our algorithm substantially reduced previous computation times and show that the McClure formula on MU_{17} is non-zero. (Received September 22, 2011)