1145-11-1217 **Paul Pollack*** (pollack@uga.edu). *Some algebraic contributions to Waring's problem.*

"Waring's problem", first settled by Hilbert in 1909, is the task of showing that for every positive integer k, there is a finite $g(k)$ such that every nonnegative integer is a sum of $g(k)$ kth powers of nonnegative integers. For example, we can take $g(2) = 4$, since every nonnegative integer is a sum of four squares. While today the circle method is the principal tool used to study Waring's problem and its variants, Hilbert's solution was more algebraic, depending on the existence of certain polynomial identities. I will survey work on variants of Waring's problem where the algebra comes back into focus. Two examples from the work of the speaker: (1) an analogue of Waring's problem in the ring of (Lipshitz) integral quaternions, (2) a proof that a certain number field analogue of $g(k)$ — while always finite — cannot be bounded solely in terms of k. (Received September 20, 2018)