1106-52-1639 **Kevin G. Hare** (kghare@uwaterloo.ca), Department of Pure Mathematics, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada, and **Michael J. Mossinghoff*** (mimossinghoff@davidson.edu), Department of Mathematics & Computer Science, Davidson College, Davidson, NC 28035-6996. *Sporadic Reinhardt polygons.*

A *Reinhardt polygon* is a convex n-gon that, for n not a power of 2, is optimal in three different geometric optimization problems, for example, it has maximal perimeter relative to its diameter. Some such polygons exhibit a particular periodic structure; others are termed *sporadic*. Prior work has described the periodic case completely, and has shown that sporadic Reinhardt polygons occur precisely when n has the form $n = pqr$, with p and q distinct odd primes and $r \geq 2$. We show that sporadic Reinhardt polygons outnumber the periodic ones for almost all n, and determine that this first occurs at $n = 105$. We also compute a formula for the number of sporadic Reinhardt polygons when $n = 2pq$, with p and q distinct odd primes. (Received September 14, 2014)