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Samuel S Wagstaff* (ssw@cerias.purdue.edu), Department of Computer Science and CERIAS, Recitation Building, Purdue University, West Lafayette, IN 47907-2086. *Congruences for $r_s(n)$ modulo $2s$.*

Let $r_s(n)$ denote the number of ways to write an integer n as the sum of s squares of integers. We determine $r_s(n)$ modulo $2s$ when s is prime or a power of 2. For other s , we determine $r_s(n)$ modulo the largest power of 2 dividing $2s$. (Received November 30, 2005)