1135-VS-1277  Robert Styer* (robert.styer@villanova.edu) and Reese Scott. Number of solutions to the Diophantine equation $X + Y = c^z$. Preliminary report.

Consider $X + Y = c^z$ where $c > 1$ is odd, $\gcd(X, Y) = 1$, $\gcd(XY, c) = 1$, with $XY$ divisible precisely by primes in a given set of $n$ primes. The number of solutions $(X, Y, z)$ in positive integers is bounded by $2^{n-1} + 1$. When $n < 4$ the bound in Theorem 1 is precise. This bound is independent of the number of primes dividing $c$. As a corollary, $ra^x + sb^y = c^z$ has at most 4 solutions in positive integers $(x, y, z)$ except for a family of exceptions. (Received September 20, 2017)