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)