

1077-11-1786

**Robert A Styer\*** ([robert.styer@villanova.edu](mailto:robert.styer@villanova.edu)), Department of Mathematics and Statistics, 800 Lancaster Avenue, Villanova, PA 19085. *Number of solutions in nonnegative integers  $x$  and  $y$  to the generalized Pillai equation  $\pm ra^x \pm sb^y = c$ .* Preliminary report.

We consider  $N$ , the number of solutions  $(x, y, u, v)$  to the equation  $(-1)^u ra^x + (-1)^v sb^y = c$  in nonnegative integers  $x, y$  and integers  $u, v \in \{0, 1\}$ , for given integers  $a > 1$ ,  $b > 1$ ,  $c > 0$ ,  $r > 0$  and  $s > 0$ . There are nine essentially distinct  $(a, b, c, r, s)$  with  $N \geq 4$ . The proof uses linear forms in logarithms to give bounds on  $a$  and  $b$  of  $8 \cdot 10^{14}$ , then a combination of LLL basis reduction, bootstrapping, and expansions of the exponents allow us to eliminate the remaining possibilities. We note that  $N = 3$  for an infinite number of  $(a, b, c, r, s)$ . Our work differs from previous work in that we allow  $x$  and  $y$  to be zero and also allow choices of  $(u, v)$  other than  $(0, 1)$ . This is joint work with Reese Scott. (Received September 20, 2011)