

# Simultaneous Pell Equation of Indefinite Signature

Ryotaro Okazaki

Let  $a_1, a_2, b_1$  and  $b_2$  be given positive integers such that  $a_1a_2, b_1b_2$  and  $a_1a_2b_1b_2$  are non-square. We consider the system

$$\begin{cases} a_1x^2 - a_2z^2 = \pm 4, \\ b_1y^2 - b_2z^2 = \pm 4 \end{cases}$$

of Diophantine equations in unknown positive integers  $x, y$  and  $z$ , where signature of the right hand side may depend on  $x, y$  and  $z$ . We show this equation has at most 3 solutions under the technical assumption  $\max\{a_1, a_2, b_1, b_2\} \geq 10^{15}$ .