1026-11-184 **Michelle Manes*** (mmanes@math.brown.edu), Department of Mathematics, Box 1917, Brown University, Providence, RI 02912. *Rational Periodic Points for Rational Maps with Automorphims.*

Let $\phi : \mathbb{P}^1 \to \mathbb{P}^1$ be a rational map of degree $d = 2$ defined over $\mathbb{Q}$ and assume that $f^{-1} \circ \phi \circ f = \phi$ for some nontrivial $f \in \mathrm{PGL}_2$. We describe families of such maps that have $\mathbb{Q}$-rational periodic points of period 1, 2 and 4, and we prove that no such map has a $\mathbb{Q}$-rational periodic point of exact period 3. We give a complete description of the $\mathbb{Q}$-rational preperiodic points whose period is at most 4, and show in particular that there are at most 12 such points. (Received February 26, 2007)