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Sebastian I Troncoso* (troncosomath@gmail.com), Department of Mathematics, 619 Red Cedar Road, C212 Wells Hall, East Lansing, MI 48824. *Bound for preperiodic points for maps with good reduction.*

Let K be a number field and let ϕ in $K(z)$ be a rational function of degree $d \geq 2$. Let S be the places of bad reduction for ϕ (including the archimedean places). Let $Per(\phi, K)$, $PrePer(\phi, K)$, and $Tail(\phi, K)$ be the set of K -rational periodic, preperiodic, and purely preperiodic points of ϕ , respectively. This work presents two main results. The first result gives a bound for $|PrePer(\phi, K)|$ in terms of the number of places of bad reduction $|S|$ and the degree d of the rational function ϕ . This bound significantly improves a previous bound given by J. Canci and L. Paladino 2014. For the second result, assuming that $|Per(\phi, K)| \geq 4$ (resp. $|Tail(\phi, K)| \geq 3$), we prove bounds for $|Tail(\phi, K)|$ (resp. $|Per(\phi, K)|$) that depend only on the number of places of bad reduction $|S|$ (and not on the degree d). We show that the hypotheses of this result are sharp, giving counterexamples to any possible result of this form when $|Per(\phi, K)| < 4$ (resp. $|Tail(\phi, K)| < 3$). (Received September 14, 2016)