

Exceptional covers and bijections of rational points

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Abstract. Let k be a finite field. Obviously, a map $f : k \rightarrow k$ is surjective if and only if it is injective. We have shown that something much more general is true: that a separable, proper morphism of curves $f : X \rightarrow Y$ over a finite field k is surjective on k -rational points if and only if it is injective on k -rational points, provided that the cardinality of k is sufficiently large relative to the genus of Y and the degree of f . The proof uses the Hasse-Weil theorem along with ideas of Lenstra about Galois theory of function fields over finite and some basic ideas from the geometry of surfaces. This talk represents joint work with M. Zieve.

