1056-11-831 **Michelle Manes*** (mmanes@math.hawaii.edu), Department of Mathematics, University of Hawaii, 2565 McCarthy Mall, Keller 401A, Honolulu, HI 96822, and **Rafe Jones**. *Galois theory of quadratic rational functions with a non-trivial automorphism.* Preliminary report.

Let $f$ be a degree-2 rational function defined over a number field $K$ commuting with an involution $i \in \mathrm{PGL}_2$, and let $P \in \mathbb{P}^1$ be a fixed point of $i$. In this talk, we consider the Galois action on the rooted binary tree of preimages of $P$ under $f$. We suggest conditions under which the image of Galois in the automorphism group of the tree is as large as possible, drawing parallels to Serre's finite-index theorem for representations in the CM elliptic curve case. (Received September 17, 2009)