1054-11-94    **Michelle Manes*** (`mmanes@math.hawaii.edu`), University of Hawaii, Department of Mathematics, 2565 McCarthy Mall, Keller Hall, Honolulu, HI 96822. *Arboreal Galois representations arising from dynamical systems.* Preliminary report.

Let $G$ be the absolute Galois group of $\mathbb{Q}$, and let $T$ be the complete rooted $d$-ary tree, where $d \geq 2$. Building on the work of Boston and Jones, and in parallel to the well-developed and powerful theory of linear $p$-adic representations of $G$, we study "arboreal" representations of $G$ into the automorphism group of $T$. These arboreal representations arise from iteration of a degree-$d$ rational map on the projective line. The question of which subgroups of $\mathrm{Aut}(T)$ may appear as the image of an arboreal representation is of particular interest. Recent work focuses on rational maps with a nontrivial $\mathrm{PGL}_2$ automorphism, in analogy with the case of elliptic curves having complex multiplication. (Received September 07, 2009)