1145-VS-341 **Borys Kadets*** (`bkadets@mit.edu`). *Large arboreal Galois representations.*

Given a field K, a polynomial $f \in K[x]$ of degree d, and a suitable element $t \in K$, the set of preimages of t under the iterates $f^{\circ n}$ carries a natural structure of a complete rooted d-ary tree T_∞. The Galois action on the roots of $f^{\circ n}(x) - t$ gives rise to a homomorhism $\phi : G_K \to \mathrm{Aut}(T_\infty)$ known as the *arboreal Galois representation* attached to f and t. Arboreal representation is an arithmetic dynamics analogue of the Tate module. We study conditions under which the representation ϕ is surjective. For d even we prove a criterion relating the surjectivity of ϕ with the arithmetic of the critical orbit of f. When $d \geqslant 20$ is even we use this criterion to exhibit examples of polynomials with maximal Galois action on the preimage tree, partially affirming a conjecture of Odoni (simultaneously and independently of our work two papers on Odoni's conjecture appeared; the full conjecture was proved by Joel Specter; Robert Benedetto and Jamie Juul proved the conjecture for most number fields). We also study the case of $K = F(t)$ and $f \in F[x]$ in which the corresponding Galois groups are the monodromy groups of ramified covers $f^{\circ n} : \mathbb{P}^1_F \to \mathbb{P}^1_F$. (Received September 02, 2018)