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Finite index for arboreal Galois representations

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Abstract: Let K be a global field of characteristic 0, let f in $K(x)$ and b in K , and set $K_n := K(f^{-n}(b))$. The projective limit of the groups $Gal(K_n/K)$ embeds in the automorphism group of an infinite rooted tree. A difficult problem is to find criteria that guarantee the index is finite; a complete answer would give a dynamical analogue of Serre's famous open image theorem. When f is a cubic polynomial over a function field, I prove a set of necessary and sufficient conditions for finite index (for number fields, the proof is conditional on Vojta's conjecture). This is joint work with Tom Tucker.

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