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Automorphisms of varieties and potential density

(joint work with D. Ghioca and T. Tucker)

Given a quasi-projective variety defined over the algebraic closure of the rationals, one often wishes to know whether it has a dense set of rational points, or, more generally, a dense set of K -points for some number field K . We consider a dynamical approach to this problem and formulate a general conjecture which claims that unless the automorphism group preserves a non-constant fibration, one should have a dense set of K -points for some number field K . We prove this conjecture for quasi-projective curves and surfaces and give some ideas for how to approach the higher dimensional cases. This is joint work with Dragos Ghioca and Tom Tucker.