

« GÉOMÉTRIE ALGÈBRE AFFINE. UN ATELIER EN L'HONNEUR DE PETER RUSSELL »
1–5 JUIN 2009

“AFFINE ALGEBRAIC GEOMETRY. A CONFERENCE IN HONOUR OF PETER RUSSELL”
JUNE 1–05, 2009

Automorphisms of affine varieties and the Skolem–Mahler–Lech theorem

JASON BELL

Department of Mathematics
Simon Fraser University
8888 University Dr
Burnaby, BC V5A 1S6
CANADA

jpb@math.sfu.ca

We look at the following dynamical problem. Let X be a complex affine variety and let ϕ be an automorphism of X . Given a point $x \in X$ and a subvariety Y of X , what can one say about the set of integers n for which $\phi^n(x) \in Y$? We show that this set of natural numbers is the union of a finite number of complete arithmetic progressions along with a finite set. We also show that the picture is more complicated in positive characteristic, and we describe recent work of Harm Derksen that hints at what the analogous result should be in this case.