

## *Infinite transitivity of automorphism groups*

### Abstract:

Given an affine algebraic variety  $X$  of dimension at least 2, we let  $\text{SAut}(X)$  denote its special automorphism group of i.e. the subgroup of the full automorphism group  $\text{Aut}(X)$  generated by all one-parameter unipotent subgroups. We show that if  $\text{SAut}(X)$  acts transitively on the smooth locus  $\text{Reg}(X)$  then it is infinitely transitive on  $\text{Reg}(X)$ . In turn, the transitivity is equivalent to the flexibility of  $X$ . The latter means that for every smooth point of  $X$  the tangent space is spanned by the velocity vectors of one-parameter unipotent subgroups of  $\text{Aut}(X)$ . We provide also different variations and applications.