
BRADLEY CURREY, Saint Louis University

Cross-sections for multiply generated abelian group actions

Let \mathfrak{g} be the real span of a finite set of commuting $n \times n$ real matrices, and put $G = \exp \mathfrak{g}$. When G satisfies a rationality condition, we show that one of the following holds: either there is a co-null, G -invariant, open subset of \mathbb{R}^n in which every orbit is regular, or there is a co-null, G -invariant, \mathcal{G}_δ subset of \mathbb{R}^n in which every orbit is not regular. We characterize these two situations in terms of the structure of G . In the regular a.e. case, we present an explicit construction of a Borel cross-section for the orbits. Examples will be provided, and natural questions, motivated by work of Führ, Larson, Schulz, Speegle and Taylor, will be raised. This is joint work with D. Arnal, B. Dali, and V. Oussa.