

Simultaneous Diophantine approximation with quadratic and linear forms

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Abstract: By Margulis's theorem proving the Oppenheim conjecture one knows that a quadratic form Q in $n > 2$ variables which is nondegenerate indefinite and not a multiple of a rational form, takes values near any given real number, over integer n -tuples. We discuss the question of finding such n tuples near a preassigned affine subspace, which corresponds to simultaneous Diophantine approximation involving Q together with a set of linear forms. This is related to the study of dynamics of flows induced by certain diagonalisable one-parameter subgroups on homogeneous spaces of $SL(n, \mathbb{R})$.