Abstract
Siegel's lemma, an important result in Diophantine Geometry, is a statement about the existence of points of small ,,size" in a vector space over a fixed field, where the ,,size" is usually measured by a height function. An interesting variation of Siegel's lemma was obtained by Faltings, who established the existence of such small points in a vector space outside of a single subspace. I will discuss a couple generalizations of Faltings' version of Siegel's lemma, establishing the existence of points of small height in a vector space outside of any finite arrangement of subspaces, as well as generally outside of a union of varieties. These results hold over various global fields, and the arguments are based on some counting estimates for the number of lattice points in slices of a cube and a version of Combinatorial Nullstellensatz.