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On Schmidt's Subspace Theorem, Vojta's height inequalities and algebraic points in projective varieties: selected recent progres

I will give a brief sampling of recent results and guiding directions that pertain to Schmidt's Subspace Theorem, Vojta's height inequalities and applications thereof.

As some examples:

(i) It is of interest to understand qualitative features, in the form of tight defining inequalities for the Diophantine approximation sets that are defined as an application of the asymptotic theory of linear sections, with respect to a given linear system, that arise via the Diophantine arithmetic exceptional sets of the Subspace Theorem.

(ii) It is of interest to understand the extent to which algebraic points of a given bounded degree in a given projective variety, and more generally Deligne-Mumford stack, accumulate along proper subvarieties.

(iii) It is of interest to understand the extent to which defining equations and higher syzygies of embedded projective varieties govern questions about effectivity and complexity for calculation of local Weil and height functions (and twisted variants thereof).

As I will explain, there are several points of departure for these inter-related themes.

Finally, I intend to report on the recent and very interesting joint work, with Chatchai Noytaptim, in which we give criteria for non-Zariski density of (D,S)-integral points in forward orbits. This is achieved as an application of Schmidt's Subspace Theorem.