

ABSTRACT

Title of dissertation: ON DEFINABILITY OF TYPES IN
DEPENDENT THEORIES

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Using definability of types for stable formulas, one develops the powerful tools of stability theory, such as canonical bases, a nice forking calculus, and stable embeddability. When one passes to the class of dependent formulas, this notion of definability of types is lost. However, as this dissertation shows, we can recover suitable alternatives to definability of types for some dependent theories. Using these alternatives, we can recover some of the power of stability theory.

One alternative is uniform definability of types over finite sets (UDTFS). We show that all formulas in dp-minimal theories have UDTFS, as well as formulas with VC-density < 2 . We also show that certain Henselian valued fields have UDTFS.

Another alternative is isolated extensions. We show that dependent formulas are characterized by the existence of isolated extensions, and show how this gives a weak stable embeddability result. We also explore the idea of UDTFS rank and show how it relates to VC-density.

Finally, we use the machinery developed in this dissertation to show that VC-minimal theories satisfy the Kueker Conjecture.