ABSTRACT

Categoricity and Stability in Abstract Elementary Classes

by

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This thesis tackles the classification theory of non-elementary classes from two perspectives. In Chapter II we work towards a categoricity transfer theorem, while Chapter III focuses on the development of a stability theory for abstract elementary classes (AECs).

The results in Chapter II are in a context idenitified by Shelah and Villaveces in which the amalgamation property does not necessarily hold. The longterm goal is to solve Shelah's Categoricity Conjecture in this context. One of the first steps is to isolate a suitable notion of saturation. I have solved a conjecture of Shelah and Villaveces by proving the uniqueness of limit models, which will serve as our notion of saturation.

The work in Chapter III is joint with Rami Grossberg. We identify a general context (tame abstract elementary classes) in which we begin developing the stability theory. Using the notion of splitting introduced by Shelah for AECS, we prove the existence of Morley sequences in tame, stable AECs. It is feasible that this result will lead to a Stability Spectrum Theorem for tame AECs and may even motivate a workable definition of dividing.