Ph.D. Thesis

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Distinguishing complete sets with respect to strong notions of reducibility

Abstract

This thesis investigates a notion of reducibility, introduced by Peter Winkler, that is total on all computably enumerable oracles. Marcia Groszek and Rebecca Weber show that this is a new notion of reducibility and it is not transitive. They give sufficient and "almost necessary" conditions that make this notion of reducibility transitive. We call the transitive notion of reducibility D^+-reducibility.

We show that D^+ is a new notion of reducibility and that we can distinguish D^+reducibility from other notions of reducibility by studying complete sets. In particular, we can find D^+complete sets that fail to be complete with respect to all reducibilities that are not disqualified by previous results. We can also find complete sets with respect to all reduciblities (that are not disqualified by previous results) that fail to be D^+complete.