▶ MINGZHONG CAI,

   An introduction to provability degrees.

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Given two total recursive functions φ and ψ, we say φ is *provably reducible* to ψ if the totality of ψ proves the totality of φ (in a fixed base system). The structure of *provability degrees* is the corresponding degree structure, i.e., the class of all total recursive functions modulo provable equivalence, and equivalently it is the Lindenbaum Algebra of true Π_2^0 sentences.

We study this proof-theoretic degree structure using recursion-theoretic methods. I will give a survey on some sample theorems, notions and proof-techniques, and then discuss some open questions and possible directions of future research.