

# The provable NP search problems of weak second order bounded arithmetic

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I will talk about some recent work analyzing the strength of bounded arithmetic theories through characterizing the **NP** search problems that they prove are total. These are closely analogous with the provably recursive functions of classical arithmetic theories. It is hoped that they will be useful for deriving some non-provability results. In particular I will describe a new family of principles about labellings of large, bounded degree graphs which characterize the search problems for a range of first-order and weak second-order bounded arithmetic theories.