

## Possible Scott Ranks of Formulas of Small Quantifier Rank

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One of the most interesting questions which has come out of the study of Vaught's conjecture is "What are the possible values of Scott rank for first order scattered theories?". It is known that there are first order scattered theories with Scott rank less than or equal to 3 and with Scott rank  $\omega_1$ . But, no other values are known. However, if instead of simply looking at 1st order theories you allow yourself a single countable disjunction, then the possible Scott ranks of scattered theories are cofinal in  $\omega_1$  (and they can be shown to take on almost all values). In this talk we will give an outline of a construction based on Robin Knight's counter example to Vaught's conjecture such that, given any  $\alpha$ , the construction will give a theory (with one countable disjunction) with Scott rank greater than  $\alpha$ .