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AN UNDECIDABLE EXTENSION OF MORLEY"S THEOREM ON THE NUMBER OF COUNTABLE MODELS

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This is joint work with Christopher J. Eagle, Clovis Hamel, and Sandra Muller. We show that Morley's theorem on the number of countable models of a countable first-order theory becomes an undecidable statement when extended to second-order logic. More generally, we calculate the number of equivalence classes of sigma-projective equivalence relations in several models of set theory. Our methods include random and Cohen forcing, Woodin cardinals and Inner Model Theory.