

COUNTABLE INFINITE EXISTENTIALLY CLOSED MODELS OF UNIVERSALLY AXIOMATIZABLE THEORIES

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In the present article, we obtain a new criterion for a model of a universally axiomatizable theory to be existentially closed. The notion of a maximal existential type is used in the proof and for investigating properties of countable infinite existentially closed structures. The notions of a prime and a homogeneous model, which are classical for the general model theory, are introduced for such structures. We study universal theories with the joint embedding property admitting a single countable infinite existentially closed model. We also construct, for every natural n , an example of a complete inductive theory with a countable infinite family of countable infinite models such that n of them are existentially closed and exactly two are homogeneous.

Key words and phrases: universal and existential formulas (sentences), existentially closed structure, elementarily closed structure, countable infinite structure, isomorphic embedding (extension), elementary embedding (extension).

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