

Strong Foundational Systems and Automorphisms

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ABSTRACT: A number of strong foundational theories can be characterized among weaker ones by the existence of certain automorphisms exhibited by their models. Such strong theories include:

- (1) Peano arithmetic,
- (2) Second order arithmetic (Analysis) with Π^1_∞ -dependent choice scheme,
- (3) Zermelo-Fraenkel set theory with a scheme asserting, for each natural number n , the existence of Σ_n -reflecting n -Mahlo cardinals, and
- (4) Kelley-Morse class theory with a weakly compact class of ordinals, and with Π^1_∞ -dependent choice scheme.

These characterizations are not only of intrinsic interest, but can also be used to give precise information about models of various extensions of the Quine-Jensen unorthodox system *NFU* of set theory with a universal set.

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