

# Homomorphisms of multiplicative groups of fields and section conjecture

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I consider the homomorphisms above which respect algebraic dependency, i.e. map algebraically dependent elements to algebraically dependent. In order to define the notion of dependency we have to fix ground subfields in both initial and target fields

The main result states that if the map above has a nontrivial kernel and its image contains at least two independent elements then it is either a composition with a quotient by a multiplicative group of a subfield or there is a nontrivial nonarchimedean valuation related to the homomorphism. The latter case can be considered as an "integer" version of a section conjecture.