Spectra of algebraic fields and subfields

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Abstract

An algebraic field extension of $\mathbb{Q}$ or $\mathbb{Z}/(p)$ may be regarded either as a structure in its own right, or as a subfield of its algebraic closure F (either $\mathbb{Q}$ or $\mathbb{Z}/(p)$). We consider the Turing degree spectrum of F in both cases, as a structure and as a relation on F, and characterize the sets of Turing degrees that are realized as such spectra. The results show a connection between enumerability in the structure F and computability when F is seen as a subfield of F. © 2009 Springer Berlin Heidelberg.

Keywords

Algebraic, Computability, Computable model theory, Field, Spectrum