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Prescribed behavior of central simple algebras after scalar extension

Sergey V. Tikhonov
Institute of Mathematics, Minsk, Belarus

tsv@im.bas-net.by

Abstract

(Joint results with Ulf Rehmann and Vyacheslav I. Yanchevskii.) Cyclic algebras have a very simple structure, but play an important role in the theory of central simple algebras.

We prove the following

Theorem 1. Let A be a central simple algebra over a field K . Then there exists a regular field extension E/K preserving indices of central simple K -algebras such that $A \otimes_K E$ is cyclic.

In the case of algebras with involution, we have the following

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Theorem 2. Let A be a central simple algebra over a field K with an involution τ of the second kind. Then there exists a regular field extension E/K preserving indices of central simple K -algebras such that $A \otimes_K E$ is cyclic and has an involution of the second kind extending τ .

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