

Excellent field extensions for quadratic and bilinear forms

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Abstract

The title suggests a separate study of quadratic and bilinear forms, hinting that we work over fields of characteristic 2 in this talk. Quadratic form theory centers around studying the change in behavior after extending scalars to field extensions. If any quadratic (or bilinear) form could still be represented by scalars from F after extending to a field extension K/F , we then call K/F to be an excellent field extension. It is an extremely difficult question to target in general, but there are many field extensions known to be excellent. In this talk, we'll recall some well known excellent field extensions. In addition, we'll complete the picture for small degree finite extensions, particularly targeting quartic extensions.