ISOTROPY OVER FUNCTION FIELDS OF PFISTER FORMS

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An important question in the theory of quadratic forms is the following:

Given a quadratic form φ over a field F, which anisotropic forms over F become isotropic when extended to the function field of φ over F?

One would obtain an answer to this question if one could classify the minimal isotropy forms associated to the field extension. Towards this end, we provide a formula for the minimum dimension of such forms, and outline some corollaries.

It is justified to devote particular attention to the above question in the case where φ is a Pfister form. In this setting, we will discuss the relationship between the isotropy question and the excellence property, and initiate the study of m-excellence intervals. Moreover, in the case where the ground field has finite Hasse number, we will provide an answer to the isotropy question for forms of sufficiently large dimension.