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IMAR

Quadratic Forms and Groups of Type D in Characteristic 2

ABSTRACT: In the world of linear algebraic groups, the groups of type D are those related to orthogonality. We will give an overview of how groups of type D are defined using quadratic forms, bilinear forms, and orthogonal involutions. These objects have been extensively studied in the classical setting over a field of characteristic not two, since in that setting one has a convenient equivalence between quadratic forms and bilinear forms. However, this equivalence breaks down in characteristic two, along with many other things. Thus, allowing ourselves to work over an arbitrary field (or ring, or scheme) requires some modification to the theory to deal with these problems.

We will introduce the solution to this problem, so called "quadratic pairs" as introduced in *The Book of Involutions*, and then highlight some of the interesting new behaviours these pairs exhibit as we study them in more general contexts. In particular, we will provide a summary of my recent work with quadratic pairs in the phenomenon of triality and in deformation theory.