Composition of Quadratic Forms when 2 is NOT invertible

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When dealing with quadratic forms over some field, a lot of research excludes the case of characteristic 2 for a simple reason: If 2 is invertible then quadratic forms correspond bijectively to symmetric bilinear forms; if not, then things are more sophisticated. In this talk we will have a look at the situation when 2 is not invertible, working with forms over a commutative ring.

The focus is on the notion of "composition" of a quadratic form either with another quadratic form or with a symmetric bilinear form. We will discuss some results which show how the two forms of composition are related [2]. Application is given to generalize a classical result from Hurwitz [1] about the possible ranks of quadratic spaces admitting composition.

References

[1] Hurwitz, A. Über die Komposition der quadratischen Formen. (1923) *Math. Ann.* 88:1-25

[2] Lötscher, R. Quadratic and symmetric bilinear composition of quadratic forms over commutative rings (2008), *Communications in Algebra*, to appear