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Louvain-la-Neuve, Belgium. *The 3-Pfister number of quadratic forms.*

Let F be a field of characteristic different from 2 containing a square root of -1 . The 3-Pfister number of a quadratic form q in the third power of the fundamental ideal of F , is the least number of terms needed to write q as a sum of 3-fold Pfister forms. We use a combinatorial analogue of the Witt ring of F to prove that, if F is a 2-henselian valued field with at most two square classes in the residue field, then the 3-Pfister number of a d -dimensional quadratic form is less than or equal to $(d^2)/2$. (Received September 06, 2010)