Quadratic and Differential Forms over fields of Characteristic two.

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Abstract

In this talk F denotes a field of characteristic 2, $W_q(F)$ the Witt of nonsingular quadratic forms over F, $W(F)$ the Witt ring of regular symmetric bilinear forms over F. For any integer $m \geq 0$, we denote by $I_q^{m+1}(F)$ the group $I^m F \otimes W_q(F)$, where $I^m F$ is the m-th power of the fundamental ideal IF of $W(F)$, and $\otimes$ is the module action of $W(F)$ on $W_q(F)$.

Given a field extension K of F, we have two homomorphisms $i_K : W_q(F) \longrightarrow W_q(K)$ and $j_K : W(F) \longrightarrow W(K)$ induced by the inclusion $F \subset K$. A natural question that arises is to compute the kernels of these homomorphisms. This is an outstanding problem in the theory of quadratic forms.

A way to study the above problems is based on differential forms where we use a celebrated result of K. Kato which gives the connection between quadratic forms and differential forms, and, by this way, obtain results in terms of graded Witt groups.

Finally, we present some results obtained by the use of this approach.

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