

Periodicity of Hermitian K -theory and Milnor's K -groups

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Abstract

We define the higher Witt groups $W_n(A)$ as suitable cokernels between Algebraic K -theory and Hermitian K -theory of the ring A (when $n = 0$, it is the classical Witt group $W(A)$). If A is commutative, the “periodicity map” between $W_n(A)$ and $W_{n+2}(A)$ induces a filtration of $W(A)$ by ideals which is different from the classical one if A is a field. In the case of a field, we show (using the proof of Milnor's conjecture by Voevodsky) that $W_{2n}(A) \neq 0$ if $k_{2n}(A) \neq 0$. We conjecture that this new filtration of $W(A)$ is related to Quillen's K -theory of A the same way that the classical filtration of $W(A)$ is related to Milnor's K -theory of A (if A is a field).