WILD PRIMES OF A SELF-EQUIVALENCE OF A NUMBER FIELD

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Let K be a number field. By a self-equivalence of the field K we understand a pair of maps (T, t), where $T\colon \Omega(K) \to \Omega(K)$ is a bijection of the set $\Omega(K)$ of all primes of the field K and $t\colon \dot{K}/\dot{K}^2 \to \dot{K}/\dot{K}^2$ is an automorphism of the square class group $\dot{K}/\dot{K}^2$ that preserves the Hilbert symbols:

$$(x, y)_{\mathfrak{p}} = (tx, ty)_{T\mathfrak{p}} \qquad \text{for all } \mathfrak{p} \in \Omega(K),\ x, y \in \dot{K}/\dot{K}^2.$$

A finite prime $\mathfrak{p} \in \Omega(K)$ of the field K is said to be a tame prime of (T, t), if

$$\operatorname{ord}_{\mathfrak{p}} x \equiv \operatorname{ord}_{T\mathfrak{p}} tx \pmod 2 \qquad \text{for all } x \in \dot{K}/\dot{K}^2.$$

A prime $\mathfrak{p} \in \Omega(K)$ is said to be wild, if it is not a tame prime of (T, t). The set of all wild primes of the self-equivalence (T, t) is called the wild set of (T, t).

In the talk we examine wild sets of self-equivalences of algebraic number fields K which satisfy the following two conditions:

- The 2-rank of the ideal class group of K is equal to the 2-rank of the narrow ideal class group of K.
- K has a unique dyadic prime $\mathfrak{d}$ and the class of $\mathfrak{d}$ is a square in the ideal class group of K.

This is joint work with Alfred Czogała