Generalized Brauer dimension of semi-global fields

Saurabh Gosavi
Rutgers University

Abstract: Given a finite set of Brauer classes $B$ of a fixed period $\ell$, we define $\text{ind}(B)$ to be the minimum of degrees of field extensions $L/F$ such that $\alpha \otimes_F L = 0$ for every $\alpha$ in $B$. When $F$ is a semi-global field (i.e. transcendence degree one field over a complete discretely valued field), we will provide an upper-bound for $\text{ind}(B)$ which depends on invariants of fields of lower arithmetic complexity. As a simple application of our result, we will obtain an upper-bound for the splitting index of quadratic forms and finiteness of symbol length for function fields of curves over higher-local fields.