

Ted Chinburg (U. Penn) : **Lower bounds for regulators of subgroups of unit groups**

Abstract : In this talk I will discuss analytic lower bounds for the natural regulator $\text{Reg}(U)$ associated to a subgroup U of the group of units of a number field K . When U is the full unit group, Zimmert proved a lower bound for $\text{Reg}(U)$ which grows exponentially in $[K : \mathbb{Q}]$. Friedman and Skoruppa developed a different method using theta functions to prove such a lower bound when U is the group of units of norm one to a subfield of bounded degree over \mathbb{Q} . In his Penn Ph.D. thesis, James Sundstrom showed how to prove such a bound when U is the group of units of norm 1 to two different real quadratic subfields. I will report on Sundstrom's work as well as on some more recent work with him and Friedman on handling all U of bounded corank. The methods are analytic and involve estimates for multidimensional inverse Mellin transforms of products of values of the Gamma function.