ALLYSA LUMLEY, York University

Distribution of Values of L-functions associated to Hyperelliptic Curves over Finite Fields

In 1992, Hoffstein and Rosen proved a function field analogue to Gauß' conjecture (proven by Siegel) regarding the class number, h_D, of a discriminant D by averaging over all polynomials with a fixed degree. In this case $h_D = |\text{Pic}(\mathcal{O}_D)|$, where $\text{Pic}(\mathcal{O}_D)$ is the Picard group of $\mathcal{O}_D$. Andrade later considered the average value of h_D, where D is monic, squarefree and its degree $2g + 1$ varies. He achieved these results by calculating the first moment of $L(1, \chi_D)$ in combination with Artin's formula relating $L(1, \chi_D)$ and h_D. Later, Jung averaged $L(1, \chi_D)$ over monic, squarefree polynomials with degree $2g+2$ varying. Making use of the second case of Artin's formula he gives results about $h_D R_D$, where R_D is the regulator of $\mathcal{O}_D$.

For this talk we discuss the complex moments of $L(1, \chi_D)$, with D monic, squarefree and degree n varying. Using this information we can describe the distribution of values of $L(1, \chi_D)$ and after specializing to $n = 2g + 1$ we give results about h_D and specializing to $n = 2g + 2$ we give results about $h_D R_D$.

If time permits, we will discuss similar results for $L(\sigma, \chi_D)$ with $\frac{1}{2} < \sigma < 1$.