

III Giornata dei Dottorandi in Teoria dei Numeri Centro S. Elisabetta, Parma - 14 maggio 2019

FAZZARI ALESSANDRO

A central limit theorem for $\log |\zeta(1/2 + it)|$

I will present a kind of central limit theorem, which states that the distribution of $\log |\zeta(1/2 + it)|$ respect to the measure $|\zeta(1/2 + it)|^2 dt$ can be still approximated by a Gaussian. In this weighted case, as $T \rightarrow \infty$ and t is uniform in $[T, 2T]$, the mean of $\log |\zeta(1/2 + it)|$ is $\sim \log \log T$ while its variance $\sim \frac{1}{2} \log \log T$.

GAMBINI ALESSANDRO

On the average number of representations of an integer as a sum of prime powers

We investigate the average number of representations of a positive integer as the sum of k powers of primes. We extend recent results generalizing the problem, both unconditionally and assuming the Riemann Hypothesis.

MAGRONE PAOLA

Cicli di Heegner generalizzati e L -funzioni p -adiche in contesto quaternionico

In un recente lavoro, Castella e Hsieh hanno provato risultati di annullamento per gruppi di Selmer relativi a twist della rappresentazione di Galois associata a una forma modulare f con caratteri di Hecke di un campo quadratico immaginario K soddisfacente l'ipotesi di Heegner relativamente al livello di f . Tali risultati permettono, inoltre, di ottenere la Congettura di Bloch-Kato in questo particolare caso. Il punto chiave del lavoro di Castella e Hsieh è un interessante legame tra cicli di Heegner generalizzati su curve modulari e L -funzioni p -adiche.

In questo talk esamineremo un problema analogo a quello affrontato da Castella e Hsieh ma sotto un'ipotesi di Heegner "rilassata" sul campo K . Un ingrediente cruciale sarà costituito da risultati di Brooks su cicli di Heegner generalizzati su curve di Shimura.

MASOERO DANIELE

On the structure of Selmer and Shafarevich-Tate groups associated with even weight modular forms

Under a non-torsion assumption on Heegner points, results of Kolyvagin describe the structure of Shafarevich-Tate and Selmer groups of elliptic curves. We prove analogous results for (p -primary) Shafarevich-Tate and Bloch-Kato-Selmer groups associated with higher weight modular forms over imaginary quadratic fields satisfying a "Heegner hypothesis". More precisely, we will show in this talk that the structure of Shafarevich-Tate groups is controlled by cohomology classes built out of Nekovář's Heegner cycles on Kuga-Sato varieties.

TONON REMIS

The distribution of imaginary parts of the nontrivial zeros of the Riemann zeta function

We consider the distribution of $(\alpha\gamma)$ modulo one, where α is a nonzero real number and γ runs over the imaginary parts of the nontrivial zeros of the Riemann zeta function. In 1975 Hlawka, improving upon the previous results by Rademacher and Elliott, proved that this sequence is uniformly distributed modulo one. After giving some context, we will present some improvements and generalizations obtained by Ford and Zaharescu alone (2005) and then in collaboration with Soundararajan (2009). Finally, we will talk about possible ways in which these works could be further developed.