

Non-vanishing of automorphic L -functions of prime power level

Olga Balkanova, ICERM Semester Postdoc

Consider the family of L -functions associated to holomorphic new forms of fixed even integral weight and level $N \rightarrow \infty$. When N is square-free and $\phi(N) \sim N$, Iwaniec and Sarnak proved that at the minimum 25% of L -values do not vanish at the critical point.

This problem for the prime-power level $N=p^v$, $v \geq 2$ was investigated by Rouymi. He showed that at least $\frac{p-1}{p} \frac{1}{6}$ of all L -functions in the family are non-zero when $v \rightarrow \infty$ and p is fixed.

In this talk, we show how to replace $\frac{p-1}{p} \frac{1}{6}$ by $\frac{p-1}{p} \frac{1}{4}$.

This is a joint work with Dmitry Frolenkov.