Arithmetic statistics of canonical Hecke L-functions

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The canonical Hecke characters in the sense of Rohrlich form a set of algebraic Hecke characters with important arithmetic properties. For example, the central values of their corresponding L-functions are related to ranks of Gross's elliptic $\mathbb{Q}$-curves. In this talk, we explain how non-trivial bounds for ℓ-torsion in class groups of number fields can be used to prove that for an asymptotic density of 100 percent of CM fields E within certain general families, the number of canonical Hecke characters of E whose L-function has a nonvanishing central value is $\gg |disc(E)|^{\delta}$ for some absolute constant $\delta > 0$. This is joint work with B. D. Kim and Riad Masri.