Effective Sato-Tate (under GRH)

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Monday, Nov 2 at 4:15 pm
111 Cummington Street, MCS B21
Tea and cookies in MCS 144 at 4:00 pm

Abstract: Based on the Lagarias-Odlyzko effectivization of the Chebotarev density theorem, Kumar Murty gave an effective version of the Sato-Tate conjecture for an elliptic curve conditional on analytic continuation and Riemann hypothesis for the symmetric power L-functions. We use a stronger version of Chebotarev form the same Lagarias-Odlyzko paper to give a similar conditional effectivization of the generalized Sato-Tate conjecture for an arbitrary motive. As an application, we give a conditional upper bound of the form $O((\log N)^2)$ for the smallest prime at which two given rational elliptic curves with conductor at most N have Frobenius traces of opposite sign. Then we will talk about the corresponding result for higher dimensional abelian varieties.