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Moments of L-functions via the homology of braid groups

Monday 18 September 2023 18:00 (55 minutes)

Questions about the growth rate of zeta functions and L-functions are a central topic in analytic number theory. In 2005, Conrey, Farmer, Keating, Rubinstein, and Snaith posed a conjecture on the asymptotics of moments of quadratic L-functions. While these sorts of problems originate as questions about number fields, they have a more geometric version when posed over function fields in positive characteristic. I'll talk about how one can reinterpret the central object in this conjecture in terms of the action of the Galois group of a finite field on the cohomology of braid groups with certain coefficients coming from the braid group's interpretation as the hyperelliptic mapping class group. We will see the "arithmetic factor" in this conjecture appear in the part of this cohomology that is accessible through tools of homological stability. This is joint work with Jonas Bergström, Adrian Diaconu, and Dan Petersen.

Presenter: Prof. WESTERLAND, Craig (Minnesota)