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Ratios Conjectures and Multiple Dirichlet Series

Conrey, Farmer and Zirnbauer formulated the Ratios Conjectures. These powerful conjectures give asymptotic formulas for the products of ratios of shifted L-functions averaged over a family, and have many applications to notoriously difficult problems in arithmetic statistics.

In this talk, we will use multiple Dirichlet series to conditionally under GRH prove the ratios conjectures in the family of real Dirichlet L-functions, with one shift in the numerator and denominator, in some range of the shifts.