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Random Matrix Theory and statistics of families of L-functions

An important subject in number theory today goes by the name of "arithmetic statistics." This course will introduce the notion of a "family" of L-functions and will develop the random matrix tools needed to express detailed theorems and conjectures about the distribution of zeros and values of the L-functions in a family. It will make use of a good mix of techniques from random matrix theory and from analytic number theory to develop the modern theory of family statistics, including the "recipe" and the "ratios conjecture" - which are theorems in random matrix theory and conjectures in number theory. Examples from all three symmetry types - unitary, orthogonal, and symplectic will be considered in detail.