INSTITUTUL DE MATEMATICĂ "SIMION STOILOW" AL ACADEMIEI ROMÂNE

Conferința lunară

Affine Weyl group Multiple Dirichlet Series

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Miercuri 15 ianuarie 2020, ora 13

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Abstract: Multiple Dirichlet Series (MDS) have emerged as an important tool in number theory in the past 20 years. I will give a survey of the latest developments, focusing on their role in determining asymptotic formulas for moments of central values of quadratic Dirichlet L-functions of the type: $\sum_{d<X} L(1/2,\chi_d)^r$, where the sum is over all positive discriminants $d< X$.

In the remaining time, I will describe an MDS introduced by Chinta and Gunnels in the function field setting, which has a group of functional equations isomorphic to the Weyl group of a reduced root system, finite or infinite. The simplest infinite case is that of an affine root system, and here we find that the MDS satisfies a surprising additional symmetry besides the functional equations. As an application, I will show that one can use this symmetry to compute residues of the MDS in terms of infinite products, obtaining formulas which can be viewed as deformations of Macdonald's identity for the affine Weyl group. This is joint work with Adrian Diaconu and Vicențiu Pașol..