

MULTIPLE ZETA VALUES SEMINAR

Martes, 25 de noviembre de 2014

15:30 h., Aula Gris 2 (ICMat, Campus de Cantoblanco)

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Motivic Multiple Zeta Values and
Single-Valued Multiple Zeta Values
in Superstring Theory

Resumen:

In physics amplitudes describing the interaction of physical states play an important role in determining physical observables. In string theory the physical states are given by vibrations of open and closed strings and their interactions are described (at tree-level) by iterated real integrals on $\mathbb{R}P^1\{0, 1, \infty\}$ or complex integrals on $P^1\{0, 1, \infty\}$, respectively.

The mathematical structure of these string amplitudes share many recent advances in arithmetic algebraic geometry and number theory like multiple zeta values, single-valued multiple zeta values, Drinfeld, Deligne associators and Lie algebra structures related to Grothendiecks Galois theory.

We review these results, with emphasis on a beautiful link between generalized hypergeometric functions describing the real integrals on $\mathbb{R}P^1\{0, 1, \infty\}$ and the decomposition of motivic multiple zeta values. Furthermore, a relation expressing complex integrals on $P^1\{0, 1, \infty\}$ as single-valued projection of iterated real integrals on $\mathbb{R}P^1\{0, 1, \infty\}$.

This work is based on the works: arXiv:1401.1218, arXiv:1310.3259, arXiv:1205.1516