Prof. Philippe Michel
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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

SEMINAR OF MATHEMATICS

MONDAY 09 March 2015 at 15h15, lecture hall BI A0 448 (CIB)

Prof. ***Anton ALEKSEEV*** *(UNIGE)* will present a seminar entitled:

"Lie theory, Bernoulli numbers and the Kashiwara-Vergne conjecture"

Abstract:

Bernoulli numbers were introduced by Jakob Bernoulli in the beginning of the 18th century to give formulas for sums of powers of integers. They proved useful in many fields of Mathematics including Number Theory, Analysis and Topology. One of their surprizing applications is in Lie theory. Two major results, the Kirillov character formula and the Duflo isomorphism theorem make use of Bernoulli numbers.

To explain this unexpected link, we turn to the Kashiwara-Vergne conjecture on properties of the Campbell-Hausdorff series. This is a more complicated statement which implies the Duflo isomorphism theorem. The proof of the conjecture makes use of the generating series of multiple zeta values also known as the Drinfeld associator, and Bernoulli numbers are among the simplest coefficients of the associator. The main property of the Drinfeld associator (the pentagon equation) and the proof of the Kashiwara-Vergne conjecture are inspired by constructions from Quantum Field Theory.

Lausanne, March 4, 2015 / mg