



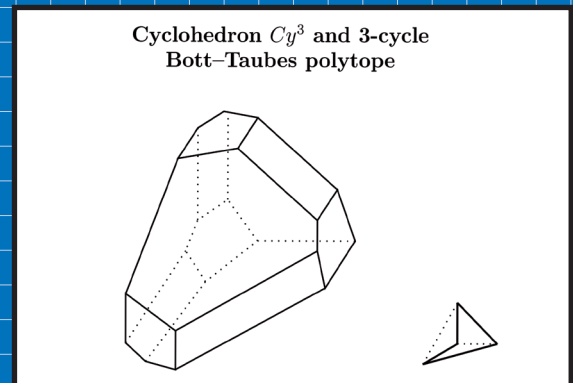
**Berlin
Mathematical
School**

BMS Friday Colloquium

Friday, 5 February 2010, 2:00 pm

Tea before the lecture starts at 1 pm

BMS Loft, Urania
An der Urania 17, 10787 Berlin



Victor Buchstaber (Manchester/Moscow):

"Combinatorics of simple polytopes and differential equations"

Polytopes are a classical object of convex geometry. They play a key role in many modern fields of research, such as algebraic and symplectic geometry, toric geometry and toric topology, enumerative combinatorics, and mathematical physics.

Victor Buchstaber will describe the results of a new approach based on a differential ring of combinatorial polytopes. This approach allows to apply the theory of differential equations to the study of polytopes. As an application we will consider the differential subrings of nestohedra and describe explicitly the generating functions of important families of graph-associahedra.

He will construct a homomorphism from the ring of convex polytopes to the ring of quasisymmetric functions over integers. Two polytopes have the same image if and only if their flag-vectors coincide. He will describe the image of this homomorphism in the term of functional equations, which are perfected form of the Bayer-Billera relations (generalized Dehn-Sommerville relations).

The talk appeals to a broad audience and contains the necessary definitions, statements of results, and examples.

