



Berlin
Mathematical
School

BMS Friday Colloquium

Friday 10 June 2011 at 14:15

Tea before the lecture begins at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Valery Alexeev

(U Georgia)

Polytopes, tilings, and compact moduli of algebraic varieties

There is a very well known and much exploited relationship between lattice polytopes and toric varieties in algebraic geometry. A less known fact is that lattice polytopes and polyhedral tilings (finite or infinite periodic) appear in the study of algebraic varieties which ostensibly are very far from toric: curves, abelian varieties, K3 surfaces, surfaces of general type, etc. The polytopes and tilings appear naturally when one investigates the degenerations of varieties and compactifications of their moduli spaces.

In this talk Valery Alexeev will try to explain the connection in the cases listed above. Some characters appearing on the scene are: matroids, hypergeometric functions, secondary polytopes and their infinite periodic analogues, Gromov-Witten invariants and their hypothetical higher-dimensional generalizations. Some of these subjects are very classical, and some are just being developed.

Valery Alexeev got his PhD from Moscow State University in 1990 and is now Barrow Professor of Mathematics at the University of Georgia and a leading scientist in algebraic geometry. His awards include a Sloan Foundation fellowship, a prestigious award given to young scientists, and a 2001 UGA Creative Research Medal.