



The Emmy Noether Research Institute for Mathematics



Bar-Ilan  
University

# Emmy Noether Lectures 2016

Wednesday, 13 January 2016

*2nd Floor Colloquium Room 201*

*Department of Mathematics, Bar-Ilan University*

**Prof. Dr. Gavril Farkas**

*Humboldt University*

*Berlin, Germany*

**10:45 “What are abelian varieties of dimension six”**

**12:00 Lunch**

**13:00 “Syzygies of algebraic curves”**

The lectures are addressed to a general audience of mathematicians and include an historical background.  
The two lectures are independent of each other.

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**14:30-17:00 Opening of Imaginary Exhibition**

*Gonda Multidisciplinary Brain Research Center*

## **“What are abelian varieties of dimension six”**

Abelian varieties are group varieties, that is, loci given by polynomial equations which simultaneously admit a group structure. It is classically known that general abelian varieties of dimension at most five are Prym varieties associated to covers between algebraic curves. This reduces the study of abelian varieties of small dimension to the beautifully concrete and rich theory of curves.

I will discuss decisive recent progress on finding a structure theorem for abelian varieties of dimension six, and the implications this uniformization result has on the geometry of their moduli space.

## **“Syzygies of algebraic curves”**

Formulated in 1984, Green's Conjecture on syzygies of canonical curves is a vast generalization of a famous theorem of M. Noether and has been one of the most intensely studied questions in algebraic geometry. It predicts that the intrinsic geometry of a curve (in the form of its complexity in its moduli space) can be recovered in a precise way from the equation of the canonical embedding. I will present an introduction to this circle of ideas and recent decisive progress on intimately related questions, like the Prym-Green Conjecture.