



THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Algebraic Geometry and Representation Theory Seminar

Room 261 ,Ziskind Building  
on Wednesday, Jun 03, 2015  
at 11:00

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Reciprocity laws and K-theory

Abstract:

We associate to a full flag  $F$  in an  $n$ -dimensional variety  $X$  over a field  $k$ , a "symbol map"  $\mu_F : K(F_X) \rightarrow \Sigma^n K(k)$ . Here,  $F_X$  is the field of rational functions on  $X$ , and  $K(\cdot)$  is the K-theory spectrum.

We prove a "reciprocity law" for these symbols: Given a partial flag, the sum of all symbols of full flags refining it is 0. Examining this result on the level of K-groups, we derive the following known reciprocity laws: the degree of a principal divisor is zero, the Weil reciprocity law, the residue theorem, the Contou-Carrère reciprocity law (when  $X$  is a smooth complete curve) as well as the Parshin reciprocity law and the higher residue reciprocity law (when  $X$  is higher-dimensional).

This is a joint work with Evgeny Musicantov.