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THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE  
Algebraic Geometry and Representation Theory Seminar

Room 261 ,Ziskind Building  
on Wednesday, Mar 30, 2016at 11:15

**moved into room 155**  
Victor Abrashkin University of Durham

$p$ -extensions of local fields with Galois groups of nilpotent class  $<p$

Abstract:

Let  $K$  be a complete discrete valuation field with finite residue field of characteristic  $p > 0$ . Let  $G$  be the absolute Galois group of  $K$  and for a natural  $M$ , let  $G(M)$  be the maximal quotient of  $G$  of nilpotent class  $<p$  and period  $p^M$ . Then  $G(M)$  can be identified with a group obtained from a Lie  $\mathbb{Z}/p^M$ -algebra  $L$  via (truncated) Campbell-Hausdorff composition law. Under this identification the ramification subgroups in upper numbering  $G(M)^{(v)}$  correspond to ideals  $L^{(v)}$  of  $L$ . It will be explained an explicit construction of  $L$  and the ideals  $L^{(v)}$ . The case of fields  $K$  of characteristic  $p$  was obtained by the author in 1990's (recently refined), the case of fields  $K$  of mixed characteristic requires the assumption that  $K$  contains a primitive  $p^M$ -th root of unity (for the case  $M=1$  cf. Number Theory Archive).