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

on Wednesday, Jun 09, 2021 at 16:30

<https://weizmann.zoom.us/j/98304397425>

Marie-France Vignéras@Jussieu, Paris

Representations of a reductive  $p$ -adic group  $G$  over a field  $C$ .

Abstract:

When  $C$  is algebraically closed of characteristic different from  $p$ , for many groups  $G$ , a list of pairs  $(J, \lambda)$ , where  $\lambda$  is a smooth  $C$ -representation of a compact modulo centre subgroup  $J$  of  $G$ , has been produced such that any irreducible cuspidal  $C$ -representation of  $G$  has the form  $\text{ind}_J^G \lambda$ , for a pair  $(J, \lambda)$  unique up to conjugation. With Guy Henniart, we produced similar lists when  $C$  is no longer assumed algebraically closed. Our other main result concerns supercuspidality. The notion of supercuspidality makes sense for the irreducible cuspidal  $C$ -representations of  $G$ , and also for the representations  $\lambda$ . In most cases we proved that  $\text{ind}_J^G \lambda$  is supercuspidal if and only if  $\lambda$  is supercuspidal.