

## Some finiteness properties of Hecke rings of $p$ -adic groups

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If  $K$  is a compact open subgroup of a  $p$ -adic group  $G$ , the fact that any double  $K$ -coset in  $G$  is the union of finitely many left  $K$ -cosets allows one to define the Hecke ring  $Z[K\backslash G/K]$  of the pair  $(G, K)$ . When  $K$  is a hyperspecial subgroup, the  $C$ -algebra  $C[K\backslash G/K]$  is a f.g. commutative algebra that was described by Satake, and this was the starting point of the Langlands program for automorphic representations. The fact that this description can be made over  $Z$  is in turn fundamental for arithmetic applications such as in the Taylor-Wiles method. For general  $K$ ,  $C[K\backslash G/K]$  is no longer commutative, but a famous theorem of Bernstein says that it is finite as a module over its center, which is a f.g.  $C$ -algebra. It is conjectured that such a statement should hold over  $Z$ . In the talk I will explain why it holds over  $Z[1/p]$ , and how it somehow unexpectedly follows from the recent work of Fargues and Scholze on the geometrization of the local Langlands correspondence. This is joint work with Helm, Kurinczuk and Moss.

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