Representations of a reductive $\mathbb{Sp}$-adic group $G$ over a field $\mathbb{CS}$.

Abstract:

When $\mathbb{CS}$ is algebraically closed of characteristic different from $p$, for many groups $G$, a list of pairs $(J, \lambda)$, where $\lambda$ is a smooth $\mathbb{CS}$-representation of a compact modulo centre subgroup $J$ of $G$, has been produced such that any irreducible cuspidal $\mathbb{CS}$-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 $\mathbb{CS}$ is no longer assumed algebraically closed. Our other main result concerns supercuspidality. The notion of supercuspidality makes sense for the irreducible cuspidal $\mathbb{CS}$-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.