

On the Left Adjoint of mod p Smooth Parabolic Induction

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Let F/\mathbb{Q}_p be a finite field extension with ring of integers \mathcal{O}_F and residue field k_F . Let \mathbf{G} be a split connected reductive group over \mathcal{O}_F , and $D(G)$ be the derived category of smooth representations of $G := \mathbf{G}(F)$ over a fixed field extension of k_F . For a Borel $\mathbf{B} = \mathbf{T}\mathbf{U} \subset \mathbf{G}$, the t -exact parabolic induction functor $\mathrm{Ind}_{\mathbf{B}}^{\mathbf{G}} : D(T) \rightarrow D(G)$ admits a left adjoint $L(U, -)$, as proved by Heyer. We study the functor $L(U, -)$ on algebraic weights $L(\lambda)$ which are p -small. When F is unramified, we show that $L(U, \mathrm{ind}_{G(\mathcal{O}_F)}^G(L(\lambda))) \in D(T)$ splits completely (under some mild modular assumptions). This is joint work with Karol Koziol.

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