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ON THE DECOMPOSITION OF REDUCIBLE PRINCIPAL SERIES REPRESENTATIONS OF P-ADIC CHEVALLEY GROUPS

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In this paper we study the decomposition of principal series representations of p-adic Chevalley groups which are induced from a minimal parabolic subgroup, and determine the structure of the commuting algebras of these representations.

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Introduction. Let G be a split reductive p-adic group, T a maximal split torus of G and $B = TU$ a minimal parabolic subgroup of G. A (unitary) character λ of T may be extended trivially across U to define a character of B. The induced representation $\mathrm{Ind}_B^G \lambda$ is called a (unitary) principal series representation of G.

Let W be the Weyl group of G and choose $w \in W$. Then the representations $\mathrm{Ind}_B^G \lambda$ and $\mathrm{Ind}_B^G w\lambda$ are equivalent. The problem of constructing explicit intertwining operators $\mathfrak{a}(w, \lambda)$ between $\mathrm{Ind}_B^G \lambda$ and $\mathrm{Ind}_B^G w\lambda$ has been studied for real semi-simple Lie groups by Kunze and Stein [24, 25, 26] Schiffmann [30], Knapp [14, 15, 16] Knapp and Stein [17, 18, 19, 20, 21, 22] Harish-Chandra [10] and others. For groups defined over a p-adic filed $\mathfrak{k}$, these operators were first studied for SL(2) by Sally [28], and then for p-adic Chevalley groups by Winarsky [36, 37], who used them to determine necessary and