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A Distributional Treatment of Relative Mirabolic Multiplicity One

We study the role of the mirabolic subgroup $P$ of $G = \text{GL}_n(F)$ ($F$ a $p$-adic field) for smooth irreducible representations of $G$ that are distinguished relative to a subgroup of the form $H_k = \text{GL}_k(F) \times \text{GL}_{n-k}(F)$. We show that if a non-zero $H_1$-invariant linear form exists on a representation, then the a priori larger space of $P \cap H_1$-invariant forms is one-dimensional. When $k > 1$, we give a reduction of the same problem to a question about invariant distributions on the nilpotent cone tangent to the symmetric space $G/H_k$. Some new distributional methods for non-reductive groups are developed.

Keywords: Distinguished representations, $p$-adic symmetric spaces, mirabolic subgroup, invariant distributions.

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