Let $X = G/H$ be a semisimple symmetric space whose complexification is isomorphic to $GL(p+q, \mathbf{C})/(GL(p, \mathbf{C}) \times GL(q, \mathbf{C}))$. An invariant eigendistribution(IED) is by definition an H-invariant joint eigendistribution of the G-invariant differential operators on X. If X is Riemannian of the non-compact type, for the zonal spherical functions (i.e. IED's) on X we have a beautiful explicit formula due to Berezin-Karpelevič[2]. In rank 1 case and in group case many authors studied IED's on a semisimple symmetric space, but our present case does not belong to these two cases(if $q \geq p > 1$).

Let $\{J_l \,|\, l \in L\}$ be a complete system of representatives of H-conjugacy classes of Cartan subspaces of X. (Note that we have $\sharp L = 1$ if X is Riemannian of the non-compact type.) Let X' be the set of regular semisimple elements of X, which is open dense and H-invariant in X. Then putting $J_l' = J_l \cap X'$, we have $X' = \bigsqcup_{l \in L} H.J_l'$. Since the restriction to X' of any IED on X is necessarily a real analytic function, we have for each IED Θ, putting $\Pi_l := \Theta|_{J_l'}$, a system of real analytic functions $\{\Pi_l\}_{l \in L}$. To give an explicit form of IED's on $\bigsqcup_{l \in L} J_l'$, we study compatibility conditions among these Π_l's, which we call (*global*) *matching conditions*.

In this poster, we outline a method to attack non-Riemannian case via matching conditions and give an explicit form of IED's for some $X = G/H$ of rank 2([1]). Our method may be considered as a generalization of that of group case and is based on another result of Berezin-Karpelevič[2] concerning the radial parts of invariant differential operators. (Joint work with S.Kato)

References

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2. F. A. Berezin and F. I. Karpelevič, *Zonal spherical functions and Laplace operators on some symmetric spaces*, Dokl. Akad. Nauk SSSR **118**, 9-12 (1958) (Russian)