

Zelevinsky operations for GL_n and a partial order on partitions

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Abstract: Let $G = G(F)$ be a connected reductive group over a p-adic field F . For G one may consider the Harish-Chandra spectrum $\Omega^t(G)$ consisting of conjugacy classes $[L, \tau]$ where L is a Levi subgroup and τ a discrete series representation of L . Twisting by unitary unramified characters is well defined which induces a decomposition of $\Omega^t(G)$ into connected components Θ and a partition of the set $Irr^t(G)$ of irreducible tempered representations into tempered components:

$$Irr^t(G) = \bigsqcup Irr_{\Theta}^t(G),$$

where the index Θ refers to representations with discrete support in Θ . On the other hand the set $Irr(G)$ of all smooth irreducible representation carries a natural Jacobson topology such that $Irr^t(G) \subset Irr(G)$ is dense. Using this topology we will introduce a certain preorder $\Theta \lesssim \Theta'$ for the set of tempered components and make some remarks on the meaning of that preorder. Restricting to $G = GL_n$ and $Irr_{\varepsilon, j}(G)$ the subset of representations with Iwahori fixed vector, we may identify the relevant components Θ with partitions of n and the preorder turns into some order on the set of partitions. The aim is to give this order in an a priori way and to see how it is related to the usual dominance order.