Abstract

In the middle of 70-ties during their study of unipotent variety of a semi-simple group G N. Spaltenstein [Sp] and R. Steinberg [St] considered so called fixed point varieties and studied their irreducible components. Orbital varieties appear as a translation of these components from flag variety of G to the nilpotent cone of $\mathfrak{g} = \mathrm{Lie}\,(G)$. They play a key role in the study of primitive ideals in the enveloping algebra $U(\mathfrak{g})$. In particular in $\mathfrak{g} = \mathfrak{sl}_n(\mathbb{C})$ there is a one-to-one correspondence between primitive ideals (of irreducible representations with trivial central character) and orbital varieties. Moreover in this case orbital variety closure is an associated variety of the corresponding simple highest weight module and therefore give a natural geometric understanding of the classification of primitive ideals [M1]. Both orbital varieties and primitive ideals are beautifully characterized by Young tableaux [J, Sp, St]. We describe this characterization and discuss the information on orbital variety closures and their ideals of definition that can be obtained from the Young tableaux [M2].

References

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