

1064-20-122

Steven V Sam* (ssam@math.mit.edu), 77 Massachusetts Avenue, Massachusetts Institute of Technology, Department of Mathematics, Cambridge, MA 02139. *Saturation theorems for the classical groups.*

Let G be either the symplectic or special orthogonal group defined over the complex numbers. Given dominant weights λ, μ, ν , let V_λ, V_μ, V_ν denote the simple modules with the corresponding highest weights. We prove that if the space of invariants $(V_{N\lambda} \otimes V_{N\mu} \otimes V_{N\nu})^G$ is nonzero for some positive integer N , then $(V_{2\lambda} \otimes V_{2\mu} \otimes V_{2\nu})^G$ is also nonzero. In this case, we say that 2 is a saturation factor for G . This was previously shown by Belkale-Kumar in the case of symplectic and odd orthogonal groups, and improves a result of Kapovich-Millson that 4 is a saturation factor for even orthogonal groups.

Our techniques involve the study of semi-invariants of representation varieties of some algebras of global dimension 2 related to symmetric quivers. The results in this direction extend some results of Derksen-Weyman on semi-invariants of quivers as well as some results of Schofield on generic representation theory. (Received September 02, 2010)