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Definable subspaces of finite dimensional representations

Let k be an algebraically closed field of characteristic 0, and denote by L a finite-dimensional semisimple Lie algebra over k. If $\phi(v)$ is a positive-primitive formula in the language of modules over the universal enveloping algebra $U(L)$, then the subset $\phi(V)$ defined by ϕ in an L-representation V is a subspace of V, considered as a vector space over k. If $\phi(V)$ defines a sum of weight spaces of V, for every finite-dimensional representation V, then there is a positive-primitive formula ϕ^- that defines an orthogonal complement of $\phi(V)$, for every finite-dimensional V. The talk will be devoted to a proof of this fact, as well as an explanation of the conjecture that if $\phi(V)$ defines the 1-simplex of weights whose boundary consists of the highest weight space, and one of its conjugates under a simple reflection, then $\phi(V)$ must be a minimal linearly bounded formula.