

Weighted homogeneous varieties

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Let G be a simple and simply connected Lie group and let P be a parabolic subgroup of G , then homogeneous space $\Sigma = G/P$ is a projective subvariety of the projective space of some G -representation V_λ , where λ is the highest weight of the representation.

One may construct weighted projective homogeneous varieties $w\Sigma$ from this. I will describe this construction and give a general formula for the Hilbert series of these varieties. Finally, I will explain how we may construct more familiar varieties such as Calabi-Yau's and Fano's as quasi-linear sections of $w\Sigma$.