Configurations of Points in Complex Projective Space

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I shall present the so-called SIC-POVM problem concerning the existence of $(n+1)^2$ mutually equidistant points in complex projective space $\mathbb{C}P^n$, which relates to embedding $\mathbb{C}P^n$ (with its Fubini-Study metric) as an adjoint orbit in $su(n+1)$. I shall sketch a proof that such configurations of 9 points in $\mathbb{C}P^2$ must be standard, using concepts from toric geometry. This improves results I presented in Sofia in 2013, and is joint work with Lane Hughston.