SIC-POVMs and Lie Algebras[1] HOAN DANG, Perimeter Institute for
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PHER FUCHS, Perimeter Institute for Theoretical Physics — A symmetric informa-
tionally complete positive operator valued measure (SIC-POVM) is usually thought
of as a highly symmetric structure in quantum state space. However Appleby, Flam-
mia and Fuchs (J. Math. Phys. **52**, 022202, 2011) have shown that the existence of a
SIC-POVM in dimension d is equivalent to a proposition concerning the Lie Algebra
$\mathrm{gl}(d, \mathbb{C})$. Related to this they show that there is, associated to each SIC-POVM, a
rich and intricate geometric structure in the adjoint representation space of $\mathrm{gl}(d, \mathbb{C})$.
In this talk we present a deeper exploration of this structure.

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