

1136-51-204

**Blake C Stacey\***, 100 Morrissey Blvd, Boston, MA 02125. *Symmetric Informationally Complete quantum measurements: Where sphere packing meets quantum information.* Preliminary report.

The problem of complex equiangular line sets—“SICs”, to the quantum information community—has a similar feel to sphere packing. It is easy to state, being only a mild “mathematician-izing” of everyday experience, yet a decisive resolution has proven quite recalcitrant. A major difficulty is that a solution in dimension  $N$  provides little help finding one in dimension  $N+1$ . SICs in dimensions 2 and 3, along with one of the solutions in  $N = 8$ , stand out in some ways from the rest and have earned the term “sporadic SICs”. These structures relate to exceptional objects known from other areas of mathematics. In particular, the three nicest of the sporadic SICs (known as the qubit, Hesse and Hoggar solutions) have a surprising link with sphere packing and integer lattices in the normed division algebras. (Received January 15, 2018)