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The Galois Group of Symmetric Measurements MARCUS APPLEBY, Perimeter Institute, 31 Caroline St N, Waterloo, Ontario, Canada, HULYA YADSAN-APPLEBY, University College, Gower St, London WC1E 6BT, UK, GERHARD ZAUNER, None — The problem of proving (or disproving) the existence of symmetric informationally complete positive operator valued measures (SICs) has been the focus of much effort in the quantum information community during the last 12 years. In this talk we describe the Galois invariances of Weyl-Heisenberg covariant SICs (the class which has been most intensively studied). It is a striking fact that the published exact solutions (in dimensions 2–16, 19, 24, 35 and 48) are all expressible in terms of radicals, implying that the associated Galois groups must be solvable. Building on the work of Scott and Grassl (*J. Math. Phys.* **51**, 042203 (2010)) we investigate the Galois group in more detail. We show that there is an intriguing interplay between the Galois and Clifford group symmetries. We also show that there are a number of interesting regularities in the Galois group structure for the cases we have examined. We conclude with some speculations about the bearing this may have on the SIC existence problem.

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