

Abstract Submitted
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Symmetric Informationally-Complete States Are Minimum Uncertainty States in Prime Dimensions¹ HOAN BUI DANG, MARCUS AP-
PLEBY, CHRISTOPHER FUCHS, Perimeter Institute for Theoretical Physics —
Symmetric informationally-complete (SIC) sets of quantum states have received
growing attention due to their many nice properties. For prime dimensions, we
add another property to the list: Weyl-Heisenberg covariant SIC states achieve min-
imum uncertainty (in a sense defined independently by the authors [1] and Wootters
and Sussman [2]) with respect to a complete set of mutually unbiased bases. In this
way, SIC states can be considered as finite-dimensional analogues to coherent states.
Because of an observation in [2], measurements based on these states are particularly
important for quantum eavesdropping in generalized BB84 quantum key distribution
schemes. References: [1] D. M. Appleby, H. B. Dang, and C. A. Fuchs, “Symmetric
Informationally-Complete Quantum States as Analogues to Orthonormal Bases and
Minimum-Uncertainty States,” arXiv:0707.2071v1 [quant-ph].
[2] D. Sussman and W. K. Wootters, “Discrete Phase Space and Minimum-
Uncertainty States,” arXiv:0704.1277v1 [quant-ph].

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Hoan Bui Dang
Perimeter Institute for Theoretical Physics

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