

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Symmetric Informationally-Complete States Are Minimum Uncertainty States in Prime Dimensions¹ HOAN BUI DANG, MARCUS APPLEBY, 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 minimum 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].

¹This work was supported in part by the U. S. Office of Naval Research (Grant No. N00014-09-1-0247).

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Date submitted: 28 Nov 2009

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