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Fisher symmetry and the geometry of quantum states JONATHAN A. GROSS, HOWARD BARNUM, CARLTON M. CAVES, Univ of New Mexico — The quantum Fisher information (QFI) is a valuable tool on account of the achievable lower bound it provides for single-parameter estimation. Due to the existence of incompatible quantum observables, however, the lower bound provided by the QFI cannot be saturated in the general multi-parameter case. A bound demonstrated by Gill and Massar (GM) captures some of the limitations that incompatibility imposes in the multi-parameter case. We further explore the structure of measurements allowed by quantum mechanics, identifying restrictions beyond those given by the QFI and GM bound. These additional restrictions give insight into the geometry of quantum state space and notions of measurement symmetry related to the QFI.

Jonathan Gross
Univ of New Mexico

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