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Quantum Physics

New Quantum Bounds for Inequalities involving Marginal Expectations

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We review, correct, and develop an algorithm which determines arbitrary Quantum Bounds, based on the seminal work of Tsirelson [Lett. Math. Phys. 4, 93 (1980)]. The vast potential of this algorithm is demonstrated by deriving both new number-valued Quantum Bounds, as well as identifying a new class of function-valued Quantum Bounds. Those results facilitate an 8-dimensional Volume Analysis of Quantum Mechanics which extends the work of Cabello [PRA 72 (2005)]. Finally we contrast the Volume defined be these bounds to that defined by the criteria of Navascues et al [NJP 10 (2008)], proving the function-valued Quantum Bounds to be more complete.

Comments:	Mostly new wording, including a new title. A rather critical typo has been corrected, and some numerical results have been improved
Subjects:	**Quantum Physics (quant-ph)**; Mathematical Physics (math-ph)
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