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**Statistical analysis of recent experiments closing the detection loophole with photons, and implications** PETER BIERHORST, Tulane University — In the past year, two teams [Giustina *et. al*; Christensen *et. al*] report having closed the detection loophole in Bell's inequality using entangled photons. That is, detection efficiencies were high enough to obviate the need for fair-sampling assumptions in the data analysis. Here, we show how to analyze the results if we allow for a more general hidden variable with memory, thus widening the class of hidden variable theories that can be ruled out by the data. We also discuss the issues raised by the block-measurement experimental design that was employed, and show how these issues make it difficult to claim that these experiments are subject *only* to the locality loophole. Finally, we examine the implications for our understanding of the nature of photons.

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