

Abstract Submitted
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Quantum lost property: A possible operational meaning for the Hilbert-Schmidt product MATTHEW PUSEY, TERRY RUDOLPH, Imperial College London — Minimum error state discrimination between two mixed states ρ and σ can be aided by the receipt of “classical side information” specifying which states from some convex decompositions of ρ and σ apply in each run. I will quantify this phenomena by the average trace distance, and give lower and upper bounds on this quantity as functions of ρ and σ . The lower bound is simply the trace distance between ρ and σ , trivially seen to be tight. The upper bound is $\sqrt{1 - \text{tr}(\rho\sigma)}$, and we conjecture that this is also tight. I will show how to reformulate this conjecture in terms of the existence of a pair of “unbiased decompositions”, which may be of independent interest. Time permitting, I will outline the evidence for this conjecture. Based on <http://arxiv.org/abs/1208.2550>

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