

Abstract Submitted
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Effect of deterministic errors on quantum error protection circuitry¹ YUNSEONG NAM, University of Maryland, REINHOLD BLÜMEL, Wesleyan University — Quantum error protection circuitry is not always useful. A balance has to be struck between its usefulness for correcting errors and its downside as a source for generating errors. In the real world, quantum error protection circuitry consists of physical gates, which are not perfect in principle. Therefore, it is important to investigate whether due to the unavoidable flaws in its quantum gates, error correction circuitry does more harm than good. What is the role of the Threshold Theorem in this? This talk is going to discuss this question and in addition present systems, such as decomposition sequences, in which the tug-of-war between the beneficial aspects of the quantum error correction circuitry and the downside of the hardware errors is illustrated.

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