1139-81-368 **Kristan Temme***, 1101 Kitchawan Rd, Yorktown Heights, NY 10598, and **Sergey Bravyi** and **Jay M Gambetta**. *Simple tricks to squeeze more out of your noisy quantum device.*

Near-term applications of early quantum devices, such as quantum simulations, rely on accurate estimates of expectation values to become relevant. Decoherence and gate errors lead to wrong estimates of the expectation values of observables used to evaluate the noisy circuit. This problem has been, at least in theory, remedied with the advent of quantum error correction. However, the overhead that is needed to implement a fully fault-tolerant gate set with current codes and current devices seems prohibitively large. In turn, steady progress is made in improving the quality of the quantum hardware. This leads to the question: what computational tasks could be accomplished with only limited, or no error correction? We introduce two simple techniques for quantum error mitigation that increase the quality of short-depth quantum simulations. The first method, extrapolation to the zero noise limit, subsequently cancels powers of the noise perturbations by an application of Richardson's deferred approach to the limit. The second method cancels errors by resampling randomized circuits according to a quasi-probability distribution. The two schemes are presented and we will discuss their application to current experiments. (Received February 16, 2018)