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*Constant-sized robust self-tests for states and measurements of unbounded dimensions*

We consider correlations,  $p_{n,x}$ , arising from measuring a maximally entangled state using  $n$  measurements with two outcomes each, constructed from  $n$  projections that add up to some scalar times an identity. We show that the correlations  $p_{n,x}$  robustly self-test the underlying states and measurements. To achieve this, we lift the group-theoretic Gowers-Hatami based approach for proving robust self-tests to a more natural algebraic framework. A key step is to obtain an analogue of the Gowers-Hatami theorem allowing to perturb an "approximate" representation of the relevant algebra to an exact one. As a corollary, we exhibit a constant-size self-test for measurements of unbounded dimension as well as all maximally entangled states with odd local dimension. (This is a joint work with Laura Mančinska and Christopher Schafhauser.)