Quantum “hyperbicycle” low-stabilizer-weight finite-rate error correction codes LEONID P. PRYADKO, ALEXEY A. KOVALEV, University of California, Riverside — We construct a large family of finite-rate quantum error correcting codes (QECCs) which interpolate between the hypergraph-product [1] and generalized bicycle codes [2]. The construction allows for the lower and upper bounds on the distance which generally scale as a square root of the block size; in several important cases the two bounds coincide. The constructed QECCs include several new classes of codes with low stabilizer weights; they can offer an advantage compared to the toric codes.


This research was supported in part by the U.S. Army Research Office under Grant No. W911NF-11-1-0027, and by the NSF under Grant No. 1018935.