Quantum "hyperbicycle" low-stabilizer-weight finite-rate error correction codes[1] 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.

[1] J.-P. Tillich and G. Zémor, in Proc. IEEE Int. Symp. Inf. Th., 2009 (ISIT 2009), pp. 799-803.
[2] D. MacKay, G. Mitchison, and P. McFadden, IEEE Trans. on Inf. Th., **50**, 2315 (2004).

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