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Alexander Barg* (abarg@umd.edu) and **Zitan Chen**. *Constructions of codes for some models of distributed storage.*

The problem that we consider is motivated by distributed storage applications. The data is encoded with an (n, k, l) MDS array code over some finite field F , and the coordinates of the codeword are placed on different storage nodes. When a node fails, the code is used to correct an erasure under the constraint that as little data as possible is transmitted from the other nodes in order to complete the correction. We consider a model when the n nodes are grouped in subsets of size u such that the communication within each subset does not contribute toward the repair cost, and the only communication that matters is the one between the subsets (this corresponds to the so-called rack-aware model of storage). We present algebraic constructions of MDS codes of length n such that $u|n$ that correct one erasure using the minimum possible amount of communication and have some other properties commonly considered in this type of problems. Our constructions exist for all admissible code parameters n, k and require the field size $|F| \geq n^2/u$ and $l \approx ((n - k)/u)^{n/u}$. (Received September 24, 2018)