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Iwan Duursma* (duursma@math.uiuc.edu). *Coding theory for distributed storage and networks.*

We present new lower bounds for the parameters of a distributed storage system. In a (n,k,d) distributed storage system a file is stored on n servers such that it can be recovered from any combination of k servers. If a server fails it can be rebuilt by retrieving information from any combination of d other servers. As an example, four bits x,y,z,t can be stored as four two-bit pairs $(x,z+t)$, $(y,t+x)$, $(z,x+y)$, $(t,y+z)$. The four bits can be reconstructed from any two pairs. And any pair can be rebuilt after receiving one bit from each of the other servers, e.g. the pair $(x,z+t)$ from the three bits y , $x+y$, $t+y+z$. We also address the related protocol of communicating over a network with multiple nodes and some of the mathematical problems that arise. (Received September 16, 2014)