

Cluttered Orderings for the Complete Graph

Myra Cohen
University of Auckland, NZ

In a systematic erasure code for the correction of two simultaneous erasures, each information symbol must have two associated parity symbols. When implemented in a redundant array of independent disks (RAID), performance requirements on the update penalty necessitate that each information symbol be associated with no more parity symbols than the two required. This leads to a simple graph model of the erasure codes, with parity symbols as vertices and information symbols as edges. Ordering the edges so that no more than f check disks (vertices) appear among any set of d consecutive edges is found to optimize access performance of the disk array when d is maximized. These *cluttered orderings* are examined for the complete graph K_n . The maximum number d of edges is determined precisely when $f \leq 5$ and when $f = n - 1$, and bounds are derived in the remaining cases.