
Seminario de Álgebra, Geometría algebraica y Singularidades
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# Locally recoverable $J$-affine variety codes

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The growth of the amount of stored information in large scale distributed and cloud storage systems makes the loss of data due to node failures a major problem. To obtain a reliable storage, when a node fails, we want to recover the data it contains by using information from other nodes. This is the *repair problem*. A solution for this problem is to protect the data using error-correcting codes, what has led to the introduction of locally recoverable (LRC) codes . LRC codes are error-correcting codes for which one or more erased coordinates of a codeword can be recovered from a set of other coordinates in that codeword. As typical examples of this solution we can mention Google and Facebook storage systems that use Reed-Solomon (RS) codes to protect the information. In this work we construct LRC codes correcting more than one erasure, which are subfield-subcodes of some $J$-affine variety codes. For these LRC codes, we compute localities $(r, \delta)$ that determine the minimum size of a set $\overline{R}$ of positions so that any $\delta - 1$ erasures in $\overline{R}$ can be recovered from the remaining $r$ coordinates in this set. We also show that some of these LRC codes with lengths $n \gg q$ are $(\delta - 1)$-optimal.

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