SEMINARIO

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Some families of optimal (r, δ)-locally recoverable codes

Abstract: Locally recoverable codes arised to treat the repair problem for large scale distributed and cloud storage systems. This problem consists of recovering the information of a failing node from the others. A locally recoverable code with locality r, C, is an error-correcting code such that any position in C can be recovered from at most r other positions of C. An improvement are (r, δ)-locally recoverable codes, which are designed for simultaneous multiple device failures. They admit a Singleton-like bound, and optimal (r, δ)-locally recoverable codes are those achieving that bound.

We give several families of optimal (r, δ)-locally recoverable codes. Most of the constructions of these codes are new, and they are designed for repairing one position by accesing at most r positions but tolerating other $\delta - 1$ erasures. These codes belong to a family of error-correcting codes which enlarges that of J-affine variety codes which also allow us to obtain (r, δ)-locally recoverable codes. These results were obtained jointly with C. Galindo and F. Hernando.

Seminario IMUVA. Edificio LUCIA
4 de Noviembre de 2022 (12:00)
Organiza: GIR SINGACOM