

Abstract Submitted
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Energy minimization to optimize information lifetime in arrays of nanowires¹ EUGENIO VOGEL, EDUARDO CISTERNAS, Universidad de La Frontera, Temuco — Magnetic nanowires trapped in the alumina membrane used to produce them can be used to store information at the nanoscale (symbols, barcodes, etc.). This is achieved by inscribing a ferromagnetic domain over the randomly oriented magnetizations as left by the fabrication process. This is achieved by a powerful magnetic tip which is able to overturn wire magnetization of sectors with a few wire diameters across. As the tip is withdrawn the ferromagnetic symbols prevail and wires in the sector interact repulsively so the overall energy is increased. This is a factor of instability for the stored information. In the present paper we investigate ways of minimizing this repulsive energy but still preserving the information stored by the original symbol at its original scale. The inscription of an opposite ferromagnetic band is a possible technique to minimize the repulsive energy (JMMM 337 (2013) 74-78). Application of this stabilization technique to different symbols is discussed.

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