LDPC codes arising from Singer cycles of projective spaces

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Abstract. Low Density Parity Check (LDPC) codes are a family of block codes characterised by admitting a sparse parity check matrix with good correction capabilities. In the present work the orbits of subspaces of a finite projective space under the action of a Singer cycle are investigated. The incidence matrix associated to each of these structures yields an LDPC code in a natural manner.

Keywords. LDPC code, Singer cycle, spread.