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(54) **LDPC CODE MATRICES**

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(57) **ABSTRACT**

An LDPC parity check matrix includes a systematic portion having a plurality of systematic elements and a parity portion having a plurality of parity elements. The value of each systematic element determines a cyclic shift to be applied to rows of an identity submatrix corresponding to that element. The value of each parity element determines a cyclic shift to be applied to rows of an identity submatrix corresponding to that element. The weights of two or more columns of the parity portion are the same.

$$H = \begin{bmatrix} 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$