BOOLEAN PARITY CHECK CODES

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Parity Check Code is a binary (n, n-1) code with parity check matrix $H = (1,1,...,1)$. Each code word has one symbol and all are given by binary vectors of length n with an even number of 1's. If the sum of the received word is odd then at least one error must have occurred in the transmission. Such codes are used in banking. Thus these parity check codes have only capacity to detect a single error. But in coding theory the main goal is not only the detection of error but also a code should have the capacity to correct errors, if not all errors at least a few of them. With this need in mind we have replaced the usual Galois field by a Boolean algebra and the operations of Boolean algebra take the place of the usual operations of the Galois field. We call these codes as Boolean parity check codes. Surprisingly these Boolean parity check codes not only detect error but also correct the patterns. It is proved that Boolean parity check code correct $2^n - 2^{n-1} - nm$, n-tuples out of the $2^n - 2^{n-1}$ n-bit vectors that are not in the code but are in the $B^n$. 