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Complement-Regular Gray Codes.

A Gray code on $n$ bits is a cyclic ordering of the $2^n$ $n$-bit words in which any two consecutive words differ by only one bit, including the first and last words. Alternately, this can be viewed as a Hamiltonian cycle in the $n$-cube. A complement-regular Gray code also has the property that any word and its complement are some constant $\Delta$ elements apart in the ordering. Here, we address the question of determining for which $(n, \Delta)$ pairs complement-regular Gray codes exist. We show that only one such pair exists for any odd $n$, and construct several classes of Gray codes for even $n$. (Received September 17, 2004)