MR0253797 (40 #7011)   94.10
MacWilliams, Jessie
Codes and ideals in group algebras. 1969
Combinatorial Mathematics and its Applications (Proc. Conf., Univ. North Carolina, Chapel Hill, N.C., 1967) pp. 317–328 *Univ. North Carolina Press, Chapel Hill, N.C.*

Following a suggestion of A. M. Gleason, the author here begins an investigation of the combinatorial properties of the left ideals of $GF(2)[G]$, the group ring of a finite group G, over the 2 element field $GF(2)$. The investigation is motivated by the fact that when G is cyclic, these ideals are precisely the cyclic codes which are of great interest in algebraic coding theory.

The author treats the case where G is the dihedral group of order $2n$ in some detail. (In a later, as yet unpublished investigation, she treats the case of an arbitrary finite abelian group of odd order.)

Two of the relevant combinatorial properties of a left ideal I in $GF(2)[G]$ are: (1) In the basis given by G of the group ring viewed as vector space, what is the minimum "weight" of the non-zero vectors of I, where the weight of a vector is the number of 1's in its representation? (2) The dimension of I as a vector space.   *E. F. Assmus, Jr.*