1014-11-1094   **Michael P. Knapp*** (`mpknapp@loyola.edu`), Mathematical Sciences Department, Loyola College, 4501 N. Charles Street, Baltimore, MD 21210-2699. *Homogeneous additive equations in finite fields.*

In 1966, H. Davenport and D. Lewis proved that if k is a positive integer and p is a prime not dividing k, then the system of additive homogeneous congruences

$$
\begin{aligned}
a_1 x_1^k + \cdots + a_s x_s^k &\equiv 0 \pmod{p} \\
b_1 x_1^k + \cdots + b_s x_s^k &\equiv 0 \pmod{p}
\end{aligned}
$$

has a nonsingular solution whenever $s \geq 2k+1$ and any nontrivial linear combination of the forms is explicit in at least $k+1$ variables. In this talk, we extend this result to general finite fields. (Received September 27, 2005)