1112-11-247 **Xiang-dong Hou***, Department of Mathematics abd Statistics, University of South Florida, Tampa, FL. *Polynomials Meeting Ax's Bound.* Preliminary report.

Let $f \in \mathbb{F}_q[X_1, \ldots, X_n]$ with $\deg f = d > 0$ and let $Z(f) = \{(x_1, \ldots, x_n) \in \mathbb{F}_q^n : f(x_1, \ldots, x_n) = 0\}$. Ax's theorem states that $|Z(f)| \equiv 0 \pmod{q^{\lceil n/d \rceil - 1}}$, that is, $\nu_p(|Z(f)|) \geq m(\lceil n/d \rceil - 1)$, where $p = \operatorname{char} \mathbb{F}_q$, $q = p^m$, and ν_p is the p-adic valuation. In this paper, we determine a condition on the coefficients of f that is necessary and sufficient for f to meet Ax's bound, that is, $\nu_p(|Z(f)|) = m(\lceil n/d \rceil - 1)$. As an application, we find several counting formulas concerning the weight enumerators of certain Reed-Muller codes. (Received August 05, 2015)