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Francis Castro* (franciscastr@gmail.com), University of Puerto Rico, Department of Mathematics, San Juan, PR 00936-8377, and **Francis N. Castro** (francis.noel.castro@hotmail.com), University of Puerto Rico, San Juan, PR. .

In this work, we will introduce the p -weight degree of a polynomial over finite field with respect to a subset of the variables of the polynomial. Using the p -weight degree of a polynomial with respect to a subset of the variables of the polynomial, we improve the results of Moreno-Moreno(**Improvements of the Chevalley-Warning and the Ax-Katz theorems**, *Amer. J. Math.*) for polynomial equations and for exponential sums over finite fields. We prove that our results cannot be improved in general because a family of polynomials where our bounds are attained is provided. Our results give a p -adic version of the results of Cao in **Dilation of Newton Polytope and p -adic Estimate**, *Discrete Comput. Geom.* and **A Partial Improvement of the Ax-Katz Theorem**, *J. Num. Theory*. Combining our result with a result of Cao-Sun(**A Reduction for Counting the Number of Solutions of the General Diagonal Equations over Finite Fields**, *Finte Fields and Their Appl.*), we give an improvement to the p -divisibility of the general diagonal equation. This result generalizes the main result in **Optimal divisibility for certain diagonal equations over finite fields**, *J. Ramanujan Math. Soc.*.

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