Penganggaran saiz p-adic pensifar sepunya terbitan separa polinomial berdarjah enam

ABSTRACT

It is known that the value of the exponential sum $S(f;p^\alpha)$ depends on the estimate of the cardinality $|V|$, the number of elements contained in the set $V = \{x \mod p^\alpha | fx \equiv 0 \mod p^\alpha\}$ where $fx$ is the partial derivatives of $f$ with respect to $x$. The cardinality of $V$ in turn depends on the $p$-adic sizes of common zeros of the partial derivatives $fx$. This paper presents a methods of determining the $p$-adic of the components of $(\xi \eta)$ a common root of partial derivative polynomials of $f(x,y)$ in $\mathbb{Z}_p[x,y]$ of degree six based on the $p$-adic Newton polyhedron technique associated with the polynomial. The degree six polynomial is of the form $f(x,y) = ax^6 + bx^5y + cx^4y^2 + dx^3y^3 + ex^2y^4 + mxy^5 + ny^6 + sx + ty + k$. The estimate obtained is in terms of the $p$-adic sizes of the coefficients of the dominant terms in $f$.

Keyword: Cardinality; Common zero; $p$-adic sizes; Newton polyhedron; Indicator diagram