# Conjecture of Maximum Number of Minimum-Area Triangles Determined by N Lattice Points in No-Three-inLine Situation 

Li, Xuanlin

The study of extremal problems in triangle areas, since A. Oppenheim in 1967, has been going on for almost five decades. In the project, a new general case in lattice grid is proposed: Given a set of $n$ ( $n$ is greater than or equal to 3 ) lattice points in the plane and no any three points are allowed to be collinear, what is the maximum number of triangles that have the same smallest area among the $C(n, 3)$ triangles formed? Let $f(n)$ be the greatest number of such triangles among $n$ points. Two planes were set up, and each of the $n$ lattice points in the original plane was projected to a unique line in the new plane. It was then proved that for any $n, f(n)$ was between linear and quadratic. Then, a construction of $n=2^{\wedge} k(k=2,3 \ldots 8)$ lattice points was given to conjecture the non-linear bound of $f(n)$. The upper bound was conjectured to be $O(n \ln n)$.

