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The Uniformity Conjecture and the Sum-product Phenomenon

The sum-product phenomenon states that, for most of the $F(x, y)$ polynomials no matter how do we select two sets of numbers A and B , where $|A| = |B| = n$, the range of $F(A, B)$ will be much larger than n . We will see that assuming a major conjecture in arithmetic geometry, the Uniformity Conjecture of Bombieri and Lang, one can improve some of the classical results in this area.