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*Difference Sets and Polynomials*

In a series of papers in the 1970s, Sárközy proved that any set of integers of positive upper density necessarily contains two distinct elements which differ by a perfect square, as well as two elements which differ by one less than a prime number, confirming conjectures of Lovász and Erdös, respectively. In this talk, we provide a brief survey of the extensive literature that has developed on improvements and extensions of these results, culminating in a brand new "super theorem" which expands to sums of polynomials, improves certain quantitative bounds, and includes most previous results as special cases. This is joint work with Neil Lyall.