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Diophantine tuples and Diophantine powersets

Let k, n be integers with $k \geq 2$ and $n \neq 0$. A set A of positive integers is a Diophantine tuple with property $D_k(n)$ if the product of $ab+n$ is a perfect k -th power for every $a, b \in A$ with $a \neq b$. These Diophantine tuples have been studied extensively. In this talk, I will discuss some recent progress on "Diophantine powersets" (first studied by Gyarmati, Sárközy, and Stewart), where we allow $ab+n$ to be a perfect power instead of a perfect k -th power for some fixed k . Joint work with Ernie Croot.