JUNJIE ZHU, University of British Columbia
Hausdorff dimension and quadratic Roth

Many results in harmonic analysis and geometric measure theory ensure the existence of geometric configurations under the largeness of sets, which are sometimes specified using the ball condition and Fourier decay. Recently, Kuca, Orponen, Sahlsten, and Bruce, Pramanik proved a Sarkozy-like theorem, which removes the Fourier decay condition and shows that sets with large Hausdorff dimensions contain two-point patterns. The existence of a three-point configuration relying solely on the Hausdorff dimension remains intractable so far. I am reporting my ongoing work in this direction.