IZABELLA ŁABA, UBC

Incidence questions in p-adic geometry

Let $R = \mathbb{Z}/p^k\mathbb{Z}$, where p is a prime. For $k = 1$, R is a finite field, and there is a significant body of work on incidence geometry in R^n in this case. For $k \geq 2$, R is only a ring and not a field. Incidence questions in this case have new features: for example, multiple scales are present, and two non-parallel lines may intersect in more than one point depending on their angle. Major recent advances include the results of Dhar, Dvir, and Arsovski on the Kakeya problem over rings $\mathbb{Z}/N\mathbb{Z}$. I will discuss some new work on incidence questions in this setting. (Based on joint work with Charlotte Trainor and with Hailong Dao, Manik Dhar, and Ben Lund.)