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## PARTITION REGULARITY FOR SYSTEMS OF DIOPHANTINE EQUATIONS

A system of equations is called *partition regular* if every finite colouring of the positive integers produces monochromatic solutions to the system. In his thesis, Rado classified all partition regular linear systems. Recently, there has been substantial progress on generalising Rado's result to systems of polynomial equations. In 2018, using ideas from analytic number theory and harmonic analysis, Chow-Lindqvist-Prendiville obtained an analogue of Rado's theorem for diagonal equations of  $k$ th powers in sufficiently many variables. This year, I extended this result to suitably non-singular systems of diagonal equations. In this presentation I will provide a survey of these recent developments.