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Diophantine equations in the primes

We are concerned with the set of solutions, say V , to a given Diophantine equation of the form $Q(x) = 0$, $x = (x_1, \dots, x_n)$, which have each coordinate x_i a prime number. If Q is large in terms of a certain notion of rank and satisfies certain local conditions, then V behaves as expected according to standard heuristics. Our aim in this talk is to overview some further results (and questions) for the set V . In particular, we shall discuss convergence results for certain ergodic averages on V .