

## Exposé court

### **73** *Solutions to polynomial congruences with variables restricted to a box*

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We prove that for any positive integers  $k, q, n$  with  $n > N(k)$ , integer  $c$ , and polynomials  $f_i(x)$  of degree  $k$  whose leading coefficients are relatively prime to  $q$ , there exists a solution  $\underline{x}$  to the congruence

$$\sum_{i=1}^n f_i(x_i) \equiv c \pmod{q}$$

that lies in a cube of side length at least  $\max\{q^{1/k}, k\}$ . Moreover, the result is best possible up to the determination of  $N(k)$ .