

Exposé court

143 Irreducibility of truncated binomial polynomials

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For positive integers $n \geq m$, let

$$P_{n,m}(x) := \sum_{j=0}^m \binom{n}{j} x^j = \binom{n}{0} + \binom{n}{1}x + \binom{n}{2}x^2 + \dots + \binom{n}{m}x^m$$

be the truncated binomial expansion of $(1+x)^n$ consisting of all terms of degree $\leq m$. These polynomials arose in the investigation of Schubert calculus of Grassmannians. It is conjectured that for $n > m + 1$, the polynomial $P_{n,m}(x)$ is irreducible. We confirm this conjecture for $2m \leq n < (m+1)^{10}$. Under explicit abc conjecture, for a fixed m , we give an explicit n_0 depending only on m such that $\forall n \geq n_0$, the polynomial $P_{n,m}(x)$ is irreducible. This is a joint work with Prof. S. Laishram.