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Irreducibility of complex cubic polynomials with a periodic critical point

The space of monic centered complex cubic polynomials with marked critical points is isomorphic to \mathbb{C}^2 . For each $n \geq 1$, the locus \mathcal{S}_n formed by all polynomials with a specified critical point periodic of exact period n forms an affine algebraic set. We prove that \mathcal{S}_n is irreducible, thus giving an affirmative answer to a question posed by Milnor. This is a joint work with Matthieu Arfeux (PUCV, Valparaiso).