# Complex tangential curves of constant curvature in the unit ball and homogeneous polynomials

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Abstract

We prove that the complex tangential curves $\gamma$ in boundary of the unit ball in $C^2$ having the property that there exists a homogeneous polynomial $P$ such that $P = 1$ on $\gamma$ have constant curvature. This implies that a homogeneous polynomial which has a 2-dimensional manifold as maximum modulus set in the boundary of the unit ball of $C^2$ reduces to a monomial by a unitary change of variables. These results represent a positive answer to conjectures of H.O Kim.