

Abstract

Bent functions are maximally nonlinear Boolean functions, which have wide applications due to their nice combinatorial properties. It was conjectured that there are no homogeneous rotation symmetric bent functions with degree larger than two. By investigating the connections of the short algebraic normal form of a rotation symmetric Boolean function and its derivative and nonlinearity, we obtain some new nonexistence results of homogeneous rotation symmetric bent functions, which solve the above conjecture partially.