

Title: Zeros and irreducibility of Stern polynomials

Author(s): Karl Dilcher, Mohammad Kidwai and Hayley Tomkins

The classical Stern sequence was extended by Klačar, Milutinović and Petr to the Stern polynomials $B_n(z)$ defined by $B_0(z) = 0$, $B_1(z) = 1$, $B_{2n}(z) = zB_n(z)$, and $B_{2n+1}(z) = B_n(z) + B_{n+1}(z)$. Ulas conjectured that $B_p(z)$ is irreducible whenever p is a prime, and verified this for the first 10^6 primes, while Schinzel proved the conjecture for a certain class of primes. In this paper, we show that the conjecture is true for various further classes of primes, which is achieved by the use of different new results on the distribution of the zeros of certain classes of $B_n(z)$, also proved in this paper. Some of these results can be seen as variants of the classical theorem of Kakeya and Eneström.

Address:

Karl Dilcher
Department of Mathematics and Statistics
Dalhousie University
Halifax
Nova Scotia, B3H 4R2
Canada

Address:

Mohammad Kidwai
Department of Mathematics and Statistics
Dalhousie University
Halifax
Nova Scotia, B3H 4R2
Canada

Address:

Hayley Tomkins
Department of Mathematics and Statistics
Dalhousie University
Halifax
Nova Scotia, B3H 4R2
Canada