

The 8th International Conference on Lattice Path Combinatorics and Applications
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Title: **Lattice Paths and Tilings Using Stern Polynomials**

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ABSTRACT: The Stern (diatomic) sequence can be defined as the number of ways of writing a positive integer as a sum of powers of 2, with each power being used at most twice. We generalize two recently defined polynomial analogues and obtain two related one-parameter families of $(0,1)$ polynomials. Based on an observation of D.H. Lehmer on the Stern sequence, we then consider subsequences of these Stern polynomials where the number of terms is a Fibonacci number.

Both subsequences are used to investigate certain lattice paths. In particular, we establish connections between individual paths and the polynomial exponents. In the case of one polynomial family there is a connection with tilings by squares and dominoes, and in the other case the connection is with weighted Delannoy numbers.