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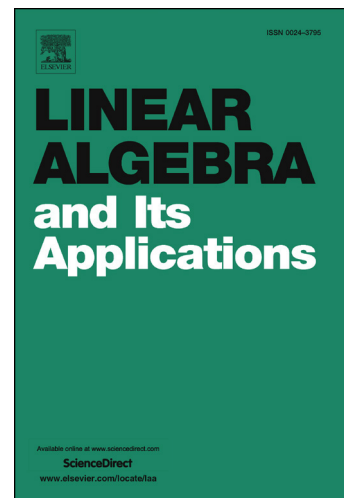
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Some polynomials related to Dowling lattices and \mathbf{x} -Stieltjes moment sequences

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Abstract

In this paper, we first introduce two sequences of polynomials, which unify many well-known polynomials related to Dowling lattices, including the Bell polynomials and the Dowling polynomials. Then we show the \mathbf{x} -Stieltjes moment property of these polynomial sequences by their continued fractions and a criterion based on Sokal, Wang and Zhu independently.

Keywords: Dowling lattice, \mathbf{x} -Stieltjes moment sequence, Continued fraction

2010 MSC: 05A10, 05A20, 30B70

1. Introduction

Let $\alpha = (a_k)_{k \geq 0}$ be a sequence of positive numbers. It is called *log-convex* if $a_k a_{k+2} \geq a_{k+1}^2$ for all $k \geq 0$. Log-convex sequences arise often in combinatorics. We refer the reader to [17, 31, 43] for investigations of the log-convexity.

Let $A = [a_{n,k}]_{n,k \geq 0}$ be a finite or infinite matrix of real numbers. It is *totally positive* (*TP* for short) if its minors of all orders are nonnegative, and it is TP_2 if all minors of order ≤ 2 are nonnegative. The *Hankel matrix* $H(\alpha)$

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