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Permanents, Determinants, Integer Sequences and Isobaric Polynomials

ABSTRACT. In this paper we construct two types of Hessenberg matrices with the properties that every weighted isobaric polynomial (WIP) appears as a determinant of one of them, and as the permanent of the other. Every integer sequence which is linearly recurrent is representable by (an evaluation of) some linearly recurrent sequence of WIPs. WIPs are symmetric polynomials written on the elementary symmetric polynomial basis. Among them are the generalized Fibonacci polynomials and the generalized Lucas polynomials, which already have these sweeping representing properties. Among the integer sequences discussed are the Chebychev polynomials of the 2nd kind, the Stirling numbers of the 1st and 2nd kind, the Catalan numbers, and the triangular numbers, as well as all sequences which are either multiplicative arithmetic functions or additive arithmetic functions.