NEW FAMILIES OF INTEGER MATRICES WHOSE LEADING PRINCIPAL MINORS FORM SOME WELL-KNOWN SEQUENCES

ALI REZA MOGHADDAMFAR\textsuperscript{†}, KAMBIZ MOGHADDAMFAR\textsuperscript{‡}, AND HADISEH TAJBAKHSH\textsuperscript{‡}

Abstract. The purpose of this article is to obtain some new infinite families of Toeplitz matrices, 7-matrices and generalized Pascal triangles whose leading principal minors form the Fibonacci, Lucas, Pell and Jacobsthal sequences. We also present a new proof for Theorem 3.1 in [R. Bacher. Determinants of matrices related to the Pascal triangle. J. Théor. Nombres Bordeaux, 14:19–41, 2002.].

Key words. Fibonacci sequence, Lucas sequence, Pell sequence, Jacobsthal sequence, Determinant, Toeplitz matrix, 7-matrix, Generalized Pascal triangle, Matrix factorization, Recurrence relation.

AMS subject classifications. 15A09, 15A36, 11C20.

In memory of Professor Michael Neumann.