

Rational spectral transformations and orthogonal polynomials

FRANCISCO MARCELLÁN

Dpto. Matemáticas, Univ. Carlos III de Madrid

pacomarc@ing.uc3m.es

Resumen

k -Toeplitz matrices are tridiagonal matrices of the form $A = [a_{i,j}]_{i,j=1}^n$ (with $n \geq k$) such that $a_{i+k,j+k} = a_{i,j}$, ($i, j = 1, 2, \dots, n - k$), so that they are k -periodic along the diagonals parallel to the main diagonal. When $k = 1$ it reduces to a tridiagonal Toeplitz matrix. The interest of the study of k -Toeplitz matrices appears to be very important not only from a theoretical point of view (in linear algebra or numerical analysis, e.g.), but also in applications. Here in this talk, motivated by certain physical systems (namely a system of quantum oscillators with a nonlinear interactions) we will discuss spectral properties of some tridiagonal quasi-periodic as well as certain perturbations of them.