SPECTRAL THEORY ON PARREAU-WIDOM SETS

Jacob Stordal Christiansen
Department of Mathematics, University of Copenhagen

In the talk, I will discuss almost periodic Jacobi operators on $l^2(\mathbb{Z})$. Such operators are selfadjoint and tend to have Cantor spectrum. Throughout, we shall focus on the class of operators whose spectrum (or essential spectrum) is an infinite gap set, E, of Parreau-Widom type. This notion is suitably defined via conformal mappings of the upper half-plane onto comb-like domains and it includes Cantor sets of positive measure. An all-important role will be played by the set of reflectionless operators on E. By a result of Remling, they form the natural limiting object for operators with a.c. spectrum on E. We shall introduce the Szegö class for E and show that all its elements are asymptotically almost periodic operators. It also follows that the associated orthogonal polynomials admit a power asymptotic behavior, aka Szegö asymptotics.