

Meeting: 1001, Evanston, Illinois, SS 16A, Special Session on Spectral Problems of Differential Operators

1001-47-157 **Miron Bekker*** (bekkerm@umr.edu), Department of Mathematics and Statistics, University of Missouri-Rolla, Rolla, MO 65401, and **Eduard Tsekanovskii**, Department of Mathematics, Niagara University, NY 14109. *On Periodic Matrix-Valued Weyl-Titchmarsh Functions.*

We consider a class of Herglotz-Nevanlinna matrix-valued functions which can be realized as the Weyl-Titchmarsh function of some symmetric operator and its self-adjoint extension. New properties of Weyl-Titchmarsh functions and a new version of the functional model in such realizations are presented. In the case of periodic Herglotz-Nevanlinna functions, we provide a complete characterization of their realizations in terms of the corresponding functional model. We obtain properties of a symmetric operator and its self-adjoint extension which generate a periodic Weyl-Titchmarsh function. We study pairs of operators with constant Weyl-Titchmarsh functions and establish connections between such and representations of the canonical commutation relations for unitary groups of operators in Weyl's form. As a consequence we obtain the Stone-Neumann theorem for two unitary groups of operators satisfying the commutation relations as well as some extension and refinement of the classical functional model for generators of those groups. Examples include multiplication operators in weighted spaces, first and second order differential operators, and the Schrödinger operator with linear potential and its perturbation by bounded periodic potential. (Received August 23, 2004)