

The Matrix Bochner Problem

01.13**William Riley Casper***(Louisiana State University, Baton Rouge, Louisiana, USA)***Time:** Thursday 25.07., 15:30 - 16:00, Room AM

Abstract: We present a solution of the matrix Bochner problem, a long-standing open problem in the theory of orthogonal polynomials, with applications to diverse areas of research including representation theory, random matrices, spectral theory, and integrable systems. Our solution is based on ideas applied by Krichever, Mumford, Wilson and others, wherein the algebraic structure of an algebra of differential operators influences the values of the operators in the algebra. By using a similar idea, we convert the matrix Bochner problem to one about noncommutative algebras of GK dimension 1 which are module finite over their centers. Then the problem is resolved using the representation theory of these algebras.