1117-47-161   **Maksym Derevyagin*** (`mderevya@olemiss.edu`). *The Jacobi matrix approach to Nevanlinna-Pick problems.*

Some mathematical models are described by probability measures that do not necessarily have finite moments of all orders. Therefore, one cannot always use the powerful tools from the theory of orthogonal polynomials and moment problems to study these models. However, this obstacle can be overcome by dealing with an interpolation problem for the Cauchy transform of a measure rather than a moment problem.

The main goal of the talk will be to demonstrate how to handle the situation for any probability measure. Namely, it'll be shown that starting with the interpolation data corresponding to Nevanlinna-Pick interpolation problems, one can get generalized eigenvalue problems that involve two Jacobi matrices. It turns out that the corresponding eigenvectors have orthogonal rational functions as entries. So, the underlying spectral object is a linear pencil of two Jacobi matrices and such pencils can be used to study Nevanlinna-Pick problems. For instance, the uniqueness criteria for solutions of Nevanlinna-Pick problems will be presented.

Finally, an explicit example related to the Cauchy distribution will be discussed. (Received January 12, 2016)