

DREXEL ANALYSIS SEMINAR

October 18, 2013

3-3:50 PM, Korman 245

Speaker: Andrey Melnikov

Title: A generalization of the inverse scattering for linear differential equations.

Abstract: In this talk I will present a theory enabling to create inverse scattering of differential equations of the form $y'(s, x) = p_*(s, x)y(s, x)$, where s is a complex spectral parameter, $p_*(s)$ is a POLYNOMIAL in s with matrix-valued coefficients, functions of x . The solutions will be mapped to solutions of $u'(s, x) = p(s)u(s, x)$, where $p(s)$ is a polynomial in s with constant matrix coefficients. The classical inverse scattering corresponds to a polynomial of degree 1.

This creates a unified approach to: Sturm-Liouville, NLS, Canonical Systems, and many others. The basic tool is the theory of systems and vessels.