

COLLOQUIUM
CENTER FOR APPLIED MATHEMATICS AND SCIENCE
DEPARTMENT OF MATHEMATICS
UNIVERSITY OF WEST GEORGIA

3:00 PM, FRIDAY, APRIL 19th, 2019, VENUE: BOYD 307

Speaker: **Dr. Alexei Rybkin**, Department of Mathematics and Statistics, University of Alaska Fairbanks, AK

Title: **The inverse scattering problem for one sided Wigner-von Neumann type potentials with applications to the KdV equation**

Abstract: We solve the inverse scattering problem for the Schrödinger equation on the full line with a potential which decays rapidly enough on one side and shows a Wigner-von Neumann type oscillatory behavior on the other. We then apply our results to the study the Cauchy problem for the KdV equation with such initial data. We show that the inverse scattering formalism works smoothly for such long-range initial data. Our method crucially relies on analysis of Hankel operators. Finally, we consider some explicit examples and do large-time asymptotic analysis of the corresponding KdV solutions based upon the Riemann-Hilbert problem approach.

All are welcome.