



Speaker: Jonatan Lenells
Baylor University

Friday, January 10, 2014
3:00 PM
258 Hurley Hall

Title: Matrix Riemann-Hilbert problems and long-time asymptotics

Abstract:

The nonlinear steepest descent method provides a powerful approach for determining the long-time asymptotics of solutions of integrable PDEs. The analysis of some of these PDEs (such as the Degasperis-Procesi equation on the half-line) gives rise to Riemann-Hilbert problems with complicated contours involving nontransversal intersections and cusps. In this talk, I will develop a theory of matrix Riemann-Hilbert problems for a class of jump contours of very low regularity. In particular, contours with cusps, corners, and nontransversal intersections will be allowed. The results can be used to determine rigorous asymptotics of solutions of initial and boundary value problems.