AIMS LAB SEMINAR
Monday, October 22
11:30-12:30, HH/403
Speaker: Walter Craig, McMaster University
Title: Loss of smoothness for Euler Flows

STATISTICS SEMINAR
Tuesday October 23
3:30 - 4:30 pm, BSB/105
Speaker: Peter Macdonald, McMaster University
Title: Fitting Finite Mixture Distributions with the R Package mixdist
Abstract: Fisheries length-frequency analysis is a classic application of finite mixture models. A fish population is a mixture of distinct age groups but the fish are difficult to age, so we want to infer the distributions of length-at-age from the mixed sample of lengths, all ages mixed together. The mixed sample may or may not be multimodal. Sometimes some ageing data are available, so we may also have conditional samples of age-at-length. My R package mixdist has been on CRAN since 2008. I will demonstrate features of an updated package soon to be posted to CRAN. The mixdist package uses grouped data so the likelihood is always multinomial and the same optimization code is used, whatever the assumptions about the component distributions. The user chooses initial values with an interactive graphical interface, one or two EM steps refine those values and then numerical optimization completes the process. Mixture models are often over-parameterized and mixdist handles this by constraining the parameters in ways suggested by the applications. For example, in length-frequency analysis, it often makes sense to assume that the coefficient of variation of length is the same for each age group. With multinomial data, a parametric or nonparametric bootstrap is very simple. Bootstrap results demonstrate that the standard errors of the estimates returned by numerical optimization of the likelihood function are realistic. They also demonstrate the quirkiness of sampling from mixture distributions and point out the danger of testing mixture distribution methodology on a single data set.
GEOMETRY & TOPOLOGY SEMINAR
Thursday October 25
3:30-4:30 pm, HH/312
Speaker: Mehmetcik Pamuk, McMaster University
Title: Arbitrarily large factorizations in mapping class groups
Abstract: On compact oriented surfaces of genus g with two boundary components, we consider positive factorizations of the boundary multi twist. We prove that for g > 2, the boundary multi twist can be written as a product of arbitrarily large number of positive Dehn tests about non separating simple closed curves. This fact has immediate corollaries on the Euler characteristics of the Stein fillings of contact three manifolds.

MODEL THEORY SEMINAR
Friday October 26
12:30-1:30 pm, HH/410
Speaker: Erin Caulfield, McMaster University
Title & Abstract: tba

COLLOQUIUM
Friday October 26
3:30-4:30 pm, HH/305
Speaker: Adrian Nachman, Department of Mathematics, University of Toronto
Title: A Nonlinear Plancherel Theorem, Global Well-Posedness for the Defocusing Davey-Stewartson Equation and the Inverse Boundary Value Problem of Calderon
Abstract: I'll describe a well-studied nonlinear Fourier transform in two dimensions for which a proof of the Plancherel theorem had been a challenging open problem. I'll sketch out the main ideas of the recent solution of this problem, as well as the background and solution of two other problems that motivated it: a global well-posedness question for a nonlinear partial differential equation and an inverse boundary problem. On the way, there will also be new estimates for classical fractional integrals, and a new result on boundedness of pseudodifferential operators with non-smooth symbols. (This is joint work with Idan Regev and Daniel Tataru.)

Refreshments will be available at 3:00 pm in HH/216

For more information on our seminars, please click on https://www.math.mcmaster.ca/index.php/events/seminars-colloquia.html