

THE MATHEMATICS DEPARTMENT PRESENTS

A MATHEMATICS COLLOQUIUM

MONDAY, January 29, 2007

BOND HALL 415

4:00 pm

Title: Relatedness Inference in Structured Populations

Speaker: Amy Anderson, University of Washington

Abstract: A number of methods have been proposed to use genetic data from two individuals to make inferences about how closely those individuals might be related. One feature of these methods is that they tend to give high relatedness estimates for pairs of individuals that share rare genetic variants. Implicit in these methods is that the rarity of each genetic variant (allele) is assumed to be known. In practice, allele frequencies are often known for broadly defined populations (e.g. Northern Europeans), but the individuals being compared might be from a subpopulation (e.g. Irish). The danger here is that we may judge two Irish individuals as being closely related merely because they share alleles that, while not uncommon in the Irish population, are relatively rare for Northern Europeans as a whole. In this talk, we will show that this type of allele frequency estimation leads, as expected, to inflated estimates of relatedness. We also outline the development of a new maximum-likelihood estimator that takes population structure into account and compare the performance of the new estimator with that of several commonly-used estimators.

Refreshments will precede the talk at 3:30pm in Bond Hall 300
courtesy of Susan Kaplan.