

COLLOQUIUM
University of Regina
Department of Mathematics and Statistics

Speaker: Patrick J. Browne (University of Saskatchewan)

Title: *Stackel Determinants*

Date: Friday, April 2, 2004

Time: 15:30

Place: Math & Stats Lounge (CW 307.18)

ABSTRACT

Stackel determinants are determinants of functions (usually real-valued continuous functions of real variables) of the form

$$\Delta = \det(f_{(i,j)}(x_i)), \quad i, j = 1, \dots, n.$$

i.e. the functions in the first row are functions of the first variable x_1 , those in the second row are functions of the second variable x_2 , etc. The lecture will cover three points:

(1) situations in which these determinants arise and (briefly) the role they play – this involves linked systems of ordinary differential equations (so called multiparameter problems) and assumptions of positivity of the determinant.

(2) properties of a Stackel determinant when the functions are continuous and real valued and each variable ranges over a finite interval and the determinant is assumed to be of one sign.

(3) properties in the $n = 2$ case when the determinant is assumed to be non-negative – here we shall describe the set on which the determinant can vanish as the disjoint union of at most 5 Cartesian products (i.e. sets of the form $A \times B$).

NOTE: Coffee and goodies will be served at 15:00 in Math & Stats Lounge.