



McMaster University



University of Toronto



University of Waterloo

**THE FIELDS INSTITUTE
FOR RESEARCH IN MATHEMATICAL SCIENCES**

SEMINAR SERIES ON CONTROL THEORY

SPEAKER:

**ZHONG GE
Post-Doctoral Fellow, Fields Institute**

The First of a series of two talks on the Topic

" Control Theory and Sub-Riemannian Geometry"

will be held

Friday, January 31, 1992 at 3:30 p.m.

at

**The Fields Institute
3rd Floor, Uni-Park 3,
185 Columbia Street West
Waterloo**

In this talk we will discuss the application of Sub-Riemannian geometry to control theory. Here the control system is linear in the control u (without drift), and the cost function is a positive definite quadratic form in u . Examples are the control of coupled rigid bodies, the position of a falling cat, etc.

We will talk about the regularity result of the value function of Sussmann and our stronger version, the structure of the cut-locus, and the global structure of the space of admissible paths. We will begin with the simplest example of a Heisenberg flywheel.

If time permits, we will also talk about the relation with 2nd order hypoelliptic operators.