



McMaster University



University of Toronto



University of Waterloo

## THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

### DIRECTOR'S SEMINAR

#### SPEAKER:

**OLEG BOGOYAVLENSKIJ**  
Department of Mathematics and Statistics  
Queen's University

On the Topic:

#### **"Existence of the Riemannian Invariants"**

The talk will be devoted to new results in the theory of systems of nonlinear partial differential equations of first order. We found the necessary and sufficient conditions for existence of Riemann invariants for such a system, or its local reducibility to a diagonal form. Necessary and sufficient conditions are found for reducibility of a system to a system of separate noninteracting equations. Certain necessary criteria are found for a system to be Hamiltonian, connected with deformations of the low-dimensional Lie algebras and with one natural algebraic fibration. Applications of these constructions will be discussed for equations of gas dynamics, for perturbations of Benney equations and for certain matrix partial differential equations, which in the special cases have the Lax form.

**Monday, May 17, 1993**

**4:00 pm, room 3018**

**at**

**The Fields Institute**

**Refreshments 3:00 pm, Common Room**

185 Columbia Street West, Waterloo, Ontario N2L 5Z5 Telephone: (519) 725-0096 Fax: (519) 725-0704

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