

---

**GREG REID**, Department of Applied Mathematics, University of Western Ontario, Middlesex College, London, ON, N6A 5B7  
*Introduction to Symbolic-Numeric Completion Methods for PDE*

Differential elimination methods apply a finite sequence of differentiations and eliminations to general systems of PDE to extract potent information about their solutions. Much recent progress has been made in the design and implementation of exact algorithms, applying to exact input systems, by researchers such as Boulier, Hubert, Mansfield, Seiler, Wittkopf and others. Though powerful, such methods cannot be applied to approximate systems, since the strong underlying use of rankings of partial derivatives, often induces instability, by forcing such methods to pivot on small quantities.

The talk will be an introduction to the new area of symbolic-numeric methods for completion of PDE. Main features include the focus on geometric methods and the use of homotopy-continuation methods for the detection of new constraints by slicing varieties in jet space with random hyperplanes. Our most recent work on this topic will be presented in this talk.