



## Statistics Seminar Series

Session 1, 2008



**Colin Rose**

tr(I) Theoretical Research Institute

### **“Oh Zeus, free me!”: the symbolic approach to mathematical statistics**

Living in a numerical versus symbolic world is not merely an issue of accuracy. Nor is it merely about approximate (numerical) versus exact (symbolic) solutions. More importantly, a symbolic approach to computational statistics significantly changes what one can do, and how one does it. We illustrate how a symbolic approach to mathematical statistical software can: free up lecture time by reducing the need to teach laborious and repetitive methods; free researchers from dreary and monotonous calculations; free oneself to experiment and play with higher-order concepts in real-time; and for appropriate classes of problems, significantly change the notion of what is difficult, what one can reasonably solve, how one solves it, and perhaps even the notion of what is publishable. We argue that the shift from traditional numerical software to symbolic software has broader parallels, in particular to an evolving epistemology of statistical knowledge ... essentially a shift from a 19th C database conception of knowledge to an algorithmic one. These ideas are illustrated using the mathStatica symbolic software package (v2). mathStatica v1 accompanies the book: Rose and Smith (2002), *Mathematical Statistics with Mathematica*, Springer-Verlag.

**About the speaker:** Dr Colin Rose is director of tr(I) (Theoretical Research Institute) in Sydney. He works in computational statistics, international finance, and economic theory. For the last few years, most of his work has been dedicated to the mathStatica software project which is accompanied by a Springer text, *Mathematical Statistics with Mathematica*.

**Time:** 4pm, Friday, 14th March

**Location:** Room 4082, Red Centre

Please join us after the seminar for wine and cheese in the staffroom.

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