

UNIVERSITY OF SYDNEY  
SCHOOL OF MATHEMATICS AND STATISTICS

Statistics Seminar

Friday March 30, 2.00pm., Carslaw Lecture Room 173 (Level 1)

**On Adaptive Estimation of Linear Functionals**

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**Abstract**

A detailed analysis of minimax estimates of arbitrary linear functionals based on infinite dimensional Gaussian models has been provided by Donoho and Liu. In particular it has been shown that if the parameter space is convex then linear estimates can always be found which have maximum mean squared error within a small constant multiple of the minimax value.

These linear estimates do however have a serious drawback. They perform badly when the parameter space is misspecified. An estimator can be called adaptive when it is simultaneously minimax over several different parameter spaces. Such estimators are in some sense robust to misspecification of the parameter space.

In the context of estimating linear functionals an adaptive estimator must be nonlinear. A detailed analysis of adaptive estimation for Lipschitz parameter spaces has been given by Lepskii. We provide a more general theory of adaptation over a collection of parameter spaces based on an analysis of a modulus of continuity between two parameter spaces.

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