

Department of Decision Sciences

Statistics Seminar

## Consistency of posterior distribution in generalised linear inverse problems

**Natalia Bochkina**

University of Edinburgh - School of Mathematics

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### Abstract

Formulating a statistical inverse problem as one of inference in a Bayesian model comes close to the way that most scientists intuitively regard the inferential task, and in principle allows the free use of subject knowledge in probabilistic model building. Motivated by an emission tomography example, we consider an ill-posed linear inverse problem with Poisson errors where the prior distribution is chosen to identify a smooth solution of interest. Consistency of the posterior distribution as a function of data (and hence as a random variable) is studied using the Ky Fan metric, giving the rates and conditions for convergence. This is a particular example of a broader class of posterior convergence problems this method applies to, namely Bayesian generalised linear inverse problems. This is joint work with Peter Green (University of Bristol).