



The University of Chicago
Department of Statistics

SECOND YEAR PHD PRESENTATION

SOMAK DUTTA

Department of Statistics
The University of Chicago

An h-likelihood Method for Agricultural Variety Trials

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ABSTRACT

We consider sparse spatial linear mixed models in agricultural field trial where conditioning on the unobserved fertility effects the mean yield for each plot is linear in variety and fertility effects. We consider a class of Gaussian intrinsic auto-regressions for the unobserved fertility effects and develop an h-likelihood method for their statistical inference. We devise a novel sparse conjugate gradient algorithm that allows us to achieve fast matrix free statistical computations. We reanalyze the wheat variety trial from Stroup et. al. (Crop Sci. 1994), which was also a homework problem in Stat345. Our analysis brings forward various new aspects of nearest neighbour adjustment such as effects on statistical analyses to changes of scale and use of implicit continuum spatial formulation.

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