

The University of Chicago

Department of Statistics

Seminar

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“A Bayesian χ^2 Test for Goodness-of-Fit”

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ABSTRACT

In this talk, I describe an extension of the classical χ^2 goodness-of-fit test to Bayesian model assessment. The extension has two important properties. First, the asymptotic distribution of the proposed statistic is χ^2 on $K-1$ degrees of freedom, regardless of the dimension of the underlying parameter vector, where K is the number of bins used in its definition. Second, the resulting diagnostic can be applied to essentially all Bayesian statistical models in which the dimension of the underlying parameter vector is finite and observations are conditionally independent. These properties contrast sharply with classical χ^2 goodness-of-fit tests based on maximum likelihood estimators, in which the asymptotic distribution of the statistic is not exactly that of a χ^2 distribution and for which observations are typically required to be identically distributed.