

STANFORD UNIVERSITY
DEPARTMENT OF STATISTICS
DEPARTMENTAL SEMINAR

4:15 p.m., Thursday, July 20, 2000
Sequoia Hall Rm. 200

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**Assessing the structural dimension of regressions
using parametric and nonparametric inverse regression**

The structural dimension of a regression is defined to be the dimension of the linear subspace spanned by projections of the p -dimensional regressor vector X , which contains part or all of the modelling information for the regression of a random variable Y on X . New assessment methods for the dimension of a regression, at the outset of the analysis, are proposed. Parametric and nonparametric inverse regression are used to estimate the structural dimension, and a lower bound on the structural dimension, respectively. Smooth parametric and nonparametric curves are fitted to the p inverse regressions. No restrictions are placed on the distribution of the regressor vector except for the **linearity condition**. Asymptotic chi-square tests for dimension are obtained in both cases. A simulation study is also presented.