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# *SEMINAR*

# "The skew t-distribution: properties, alternative parameterizations, and submodel testing"

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**Abstract:**

This talk concerns likelihood inference for the skew t-distribution, a flexible model able to deal with data whose distribution shows deviation from normality. The skew t-distribution includes both the skew normal and the normal distributions as important special cases that occur when the degrees of freedom is infinite. Inference based on the skew t -model becomes problematic in these special cases for two reasons: the expected information matrix is singular; and the parameter corresponding to the degrees of freedom takes a value occurring at the boundary of its parameter space. Alternative parameterizations are introduced that copes with these difficulties, thereby producing consistent estimators with known asymptotic properties. The asymptotic distributions of the likelihood ratio statistics are also derived by applying the results of Self and Liang (1987), which lead to asymptotic distributions which are mixtures.  It is  shown that their accuracy can be improved substantially by correcting the mixing probabilities. Furthermore, although the asymptotic distributions are non-standard, versions of Bartlett correction are developed that afford additional accuracy. Bootstrap procedures for estimating the mixing probabilities and the Bartlett adjustment factors are shown to produce excellent approximations, even for small sample sizes.