

数学特別セミナー

日時: 2月12日(水) 15:00~16:00

場所: 自然科学棟 D814

講師: Professor Vladimir Ulyanov
(Moscow State University)

題目: Uniform and L_1 -Norm Error Bounds in Asymptotic Expansions of Multivariate Scale Mixtures and their applications to generalised Hotelling's T_0^2 statistic

アブストラクト:

The talk is based on recent joint results with Prof. Y. Fujikoshi and Prof. R. Shimizu. We consider a distribution of multivariate scale mixture variate defined by $\mathbf{X} = S\mathbf{Z}$, where $\mathbf{Z} = (Z_1, \dots, Z_p)'$, Z_1, \dots, Z_p are *i.i.d.* random variables, and S is a positive definite random matrix independent of \mathbf{Z} . First we obtain asymptotic expansions of the distribution function and the density function of \mathbf{X} when $S = \text{diag}(S_1, \dots, S_p)$. Uniform error bounds are given for approximations of the distribution function of \mathbf{X} . L_1 -norm error bounds are given for approximations for the density function of \mathbf{X} . Then it is shown how our results can be extended for the general case when the scale matrix may be not necessary diagonal. The L_1 -norm error bounds are applied in obtaining error bounds for asymptotic expansions of Lawley-Hotelling's T_0^2 statistic.

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