Salzburg Mathematics Colloquium
Summer 2016

Solomon Harrar (Kentucky)
"High-dimensional multivariate repeated measures analysis with unequal covariance matrices"
May 12, 2016

Extended Abstract:

In this talk, test statistics for repeated measures design are introduced when the dimension is large. By large dimension is meant the number of repeated measures and the total sample size grow together but either one could be larger than the other. Asymptotic distribution of the statistics are derived for the equal as well as unequal covariance cases in the balanced as well as unbalanced cases. The asymptotic framework considered requires proportional growth of the sample sizes and the dimension of the repeated measures in the unequal covariance case. In the equal covariance case, one can grow at much faster rate than the other. Consistent and unbiased estimators of the asymptotic variances, which make efficient use of all the observations, will also be presented. Simulation study provides favorable evidence for the accuracy of the asymptotic approximation under the null hypothesis. Power simulations show that the new methods have comparable power with a popular method known to work well in low-dimensional situation but the new methods possess enormous advantage when the dimension is large. Data from Electroencephalograph (EEG) experiment will be analyzed to illustrate the application of the results.

Thursday, 15:00-15:45
Hörsaal 414, 1. Stock