



## **SEMINAR**

# **“Explaining Success in Sports Competitions: Paired Comparison Methods with Explanatory Variables”**

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**Sala Biblioteca, S. Faustino building**

In paired comparison models, the inclusion of covariates is a tool to explain the dominance of one of the teams or players in a competition. There are three different types of covariates that can occur in paired comparisons, the covariates can either vary over the matches (subjects), the teams (objects) or both. A general framework to include covariate effects into Bradley-Terry models is presented. For each type of covariate, appropriate penalty terms that allow for sparser models and therefore easier interpretation are proposed. The whole framework is implemented in the R-package. The approach is illustrated by using data from the German Bundesliga season 2015/16. The objective is to identify the on-field variables that are connected to the sportive success or failure of the single teams. The extended Bradley-Terry model that is proposed uses an ordinal response and (possibly team-specific) home effects. It is able to take into account on-field covariates and, therefore, allows for match-specific abilities of the teams depending on the values of the on-field covariates.