Title: **Functional Boxplots for Complex Data Visualization**

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Time: 13:15–14:15 and 14:15– Coffee/Tea

Place: **UB337**

**Abstract:**

We propose an informative exploratory tool, the functional boxplot, for visualizing functional data, as well as its generalization, the enhanced functional boxplot. Based on the center outwards ordering induced by band depth for functional data, the descriptive statistics of a functional boxplot are: the envelope of the 50% central region, the median curve and the maximum non-outlying envelope. In addition, outliers can be detected in a functional boxplot by the 1.5 times the 50% central region empirical rule, analogous to the rule for classical boxplots. The construction of a functional boxplot is illustrated on a series of sea surface temperatures related to the El Nino phenomenon and its outlier detection performance is explored by simulations. As applications, the functional boxplot and enhanced functional boxplot are demonstrated on children growth data and spatio-temporal U.S. precipitation data for nine climatic regions, respectively. Further adjustments of the functional boxplot for outlier detection in spatio-temporal data are discussed as well.

*The talk is based on joint work with Ying Sun.*

All are welcome!