

# Séminaire de Probabilités et Statistique

Mardi 03 Novembre à 14h00

Laboratoire Dieudonné  
Salle de conférence - LJAD

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*Interpretable sparse SIR for functional data*

We propose a semiparametric framework based on sliced inverse regression (SIR) to address the issue of variable selection in functional regression. SIR is an effective method for dimension reduction which computes a linear projection of the predictors in a low-dimensional space, without loss of information on the regression. In order to deal with the high dimensionality of the predictors, we consider penalized versions of SIR: ridge and sparse. We extend the approaches of variable selection developed for multidimensional SIR to select intervals that form a partition of the definition domain of the functional predictors. Selecting entire intervals rather than separated evaluation points improves the interpretability of the estimated coefficients in the functional framework. A fully automated iterative procedure is proposed to find the critical (interpretable) intervals.

The approach is proved efficient on simulated and real data. The method is implemented in the R package SISIR available on CRAN at <https://cran.r-project.org/package=SISIR> and described in V. Picheny, R. Servien and N. Vialaneix. Interpretable sparse SIR for functional data, *Statistics and Computing* (2019), 29(2), 255-267, <https://doi.org/10.1007/s11222-018-9806-6>.