



Próximo Seminario DMAT

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Sala de Seminarios, DEPARTAMENTO DE MATEMÁTICA

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Statistical properties of regularized barycenters in the Wasserstein space

In this talk, we discuss the study of data that can be described by random probability measures (discrete or absolutely continuous) with support on \mathbb{R}^d . The aim is to provide a first order statistical analysis on this space endowed with the Wasserstein distance, which boils down to the study of the Fréchet mean (or barycenter). In particular, we focus on the case of discrete data (or observations) sampled from absolutely continuous probability measures (a.c.) with respect to the Lebesgue measure. We thus introduce an estimator of the barycenter of random measures, penalized by a convex function, making it possible to enforce its a.c. Another estimator is regularized by adding entropy when computing the Wasserstein distance (which has first been introduced for computational reasons).

We are particularly interested in controlling the variance of these estimators. Thanks to these results, the principle of Goldenshluger and Lepski allows us to obtain an automatic calibration of the regularization parameters. We then apply this work to the registration of multivariate densities, especially for flow cytometry data.