SEMINARIO

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Sub-Gaussian estimation under heavy tails and contamination

Abstract: Estimating the mean and covariance under heavy tails and adversarial contamination remains a central challenge in robust statistics. In this talk, we revisit the classical trimmed mean estimator for one-dimensional mean estimation, providing new finite-sample insights. We show that the trimmed mean achieves optimal performance in this setting and satisfies a strong form of the CLT. This work is joint with Roberto I. Oliveira and Paulo Orenstein (2025).

We then turn to covariance estimation for a d-dimensional random vector from an i.i.d. sample. We show that, even in the presence of relatively heavy tails and adversarial contamination, this estimator achieves the optimal dimension-free rate of convergence. This part is based on joint work with Roberto I. Oliveira (Annals of Statistics, 2024).

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