The asymptotic analysis of some robust methods, including the Huber-skip, the Forward Search and the Impulse Indicator Saturation algorithm.

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The Forward Search (Hadi 1993, Atkinson and Riani 2000) and the Impulse Indicator Saturation algorithm (Hendry 1999) are recent statistical algorithms for avoiding outliers in linear regression. In the lectures we present the above methods and their asymptotic theory using a new iterated martingale inequality, a theory for a new class of weighted and marked empirical processes, the corresponding quantile process theory, and a fixed point argument to describe the iterative aspect of the procedure.

The algorithms are contributions to the application of robust statistics, and the same methods can be applied to give the asymptotic theory of M-estimators (Huber 1964) under weak assumptions and a wide class of regressors.

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