New methods for the statistical analysis of Hidden Markov Models
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The estimation of Hidden Markov Models (HMM-s) has attracted a lot of attention recently, see results of Douc and Matthias, LeGland and Mevel, and Leroux. The purpose of this talk is to lay the foundation of a new approach for the statistical analysis of Hidden Markov Models (HMM-s). We use a random mapping representation of HMM-s, due to Borkar. Our analysis is applicable to HMM-s with a general state-space and read-out space, assuming that the state process satisfies Doeblin’s condition. Our key technical results give conditions for the functions of the input-output process of a non-linear stochastic systems to be $L$-mixing. This result will then be applied to HMM-s extended by the filter process.