$$S_t \circ c(h)(a_s)_{ti} c(s) + \mathfrak{S}_e m^i n(a_r)$$

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Approximation of stationary sequences by independent r.v.s and its application

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Let $\{\varepsilon_k, k \in \mathbb{Z}\}$ be i.i.d. r.v.s. and let $f : \mathbb{R}^{\mathbb{Z}} \to \mathbb{R}$ be measurable and such that

$$y_k = f(\ldots, \varepsilon_{k-1}, \varepsilon_k, \varepsilon_{k+1}, \ldots) \tag{1}$$

is well defined. Sequences $\{y_k,\ k \in \mathbb{Z}\}$ which may be represented as in (1) form a very important class of stationary and ergodic processes. E.g. many well known time series models can be representent in such a way. Due to the generic form of the y_k there are different methods (e.g. coupling) to obtain m-dependent r.v.s y_{km} which approximate y_k very well. The purpose of the talk is to show on the basis of several examples that the approximation error $|y_{km} - y_k|$ is typically easy to compute. If the error is small in some sense this can be used to deduce very sharp asymptotic results avoiding the usually difficult verification of mixing conditions.