

Perfect simulation of a coupling achieving the \bar{d} -distance between chains of infinite order

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Abstract:

We explicitly construct a stationary coupling attaining Ornstein's \bar{d} -distance between ordered pairs of binary chains of infinite order. Our main tool is a representation of the transition probabilities of the coupled bivariate chain of infinite order as a countable mixture of Markov transition probabilities of increasing order. Under suitable conditions on the loss of memory of the chains, this representation implies that the coupled chain can be represented as a concatenation of iid sequences of bivariate finite random strings of symbols. The perfect simulation algorithm is based on the fact that we can identify the first regeneration point to the left of the origin almost surely. This is a joint work with Nancy L. Garcia and Clémentine Prieur.