



Some Results on the Information Loss in Dynamical Systems

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In this work we investigate the information loss in (nonlinear) dynamical input-output systems and provide some general results. In particular, we present an upper bound on the information loss rate, defined as the (non-negative) difference between the entropy rates of the jointly stationary stochastic processes at the input and output of the system.

We further introduce a family of systems with vanishing information loss rate. It is shown that not only linear filters belong to that family, but - under certain circumstances - also finite-precision implementations of the latter, which typically consist of nonlinear elements.

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