Entropic Study of a Proper "word length" for Catastrophic Envents

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Recently, a number of detailed studies have been elaborated and presented in the literature, concerning mainly the behavior of the block entropies for different time-series ranging from Number Theory to natural time series including catastrophic events, e.g. stationary parts of pre-seismic electromagnetic signals. Herein, we will be mainly concerned with the identification of relevant signatures which will mark the qualitative change of dynamics as the catastrophic events are approached. We focus on the minimum word length of symbolic dynamics where we observe the possible change on dynamics. We compare the results for various catastrophic phenomena, earthquakes, epileptic seizures, strong magnetic storms, long recorded cardiac time-series from coronary patients. We also compare the differences in results from the recently proposed "block entropy analysis by lumping" and the usual in the literature prescription of "block entropy analysis by gliding".