Pincus, Steven M.

Approximate entropy as a measure of system complexity. (English) Zbl 0756.60103

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Summary: Techniques to determine changing system complexity from data are evaluated. Convergence of a frequently used correlation dimension algorithm to a finite value does not necessarily imply an underlying deterministic model or chaos. Analysis of a recently developed family of formulas and statistics, approximate entropy (ApEn), suggests that ApEn can classify complex systems, given at least 1000 data values in diverse settings that include both deterministic chaotic and stochastic processes. The capability to discern changing complexity from such a relatively small amount of data holds promise for applications of ApEn in a variety of contexts.

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