ON ESTIMATING THE BOX COUNTING DIMENSION FROM DATA STREAMS

L. Clarke (1), L.A. Smith (1,2)

(1) Centre for the Analysis of Time Series, London School of Economics, London, UK (44 (0) 20 7955 6273), (2) Pembroke College, Oxford, UK

Despite well-known limitations which suggest rather large data sets as a mere necessary condition, the estimation of fractal dimensions remains a topic of much interest. This paper revisits the problem of estimating the box counting dimension d_0 from a time series in the context of a *data stream*, specifically when a technically endless time series is made available. Previous conjectures by Grassberger (On the fractal dimension of the Henon attractor, *Phys Lett A* **97** 224-226 1983) are investigated utilising the improvements in computational performance made over the past score years. Standard algorithms are generalized to allow the analysis of data streams.
Several specific strange attractors are considered, each pr