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**Ioannis Antoniou\*** ([iantonio@pop.vub.ac.be](mailto:iantonio@pop.vub.ac.be)). *Time Operator, Wavelets and Shift Representation of Chaotic Systems*. Preliminary report.

Multiresolutions and therefore time operators appeared originally in the study of innovation stochastic processes and dynamical systems with positive entropy production. We have constructed time operators for exact dynamical systems, diffusion equations and wavelets. The eigenfunctions of the time operator provide a shift representation of the evolution which gives new possibilities for probabilistic prediction. The shift representation is the Fourier transform of the spectral representation in terms of resonances. In the case of the cusp map, approximating the Poincare section of the Lorentz attractor, the spectral decomposition does not exist in spaces of analytic test functions while the shift representation can be explicitly constructed. (Received September 23, 2000)