

Abstract Submitted  
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**A universal dichotomy for dynamical systems with variable delay** GÜNTER RADONS, Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany, DAVID MÜLLER, Institute of Physics, Chemnitz University of Technology, Chemnitz, ANDREAS OTTO, Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany, COMPLEX SYSTEMS AND NONLINEAR DYNAMICS TEAM — We show that the dynamics of systems with time-dependent delay is fundamentally affected by the functional form of the retarded argument. Associating to the latter an iterated map, the access map, and a corresponding Koopman operator, we identify two universality classes. Members in the first are equivalent to systems with constant delay. The new, second class is characterized by modelocking behavior of their access maps and by an asymptotically linear, instead of a logarithmic scaling of the Lyapunov spectrum. The membership depends in a fractal manner only on the parameters of the delay.

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