

## Nonlinear Dynamics and Complex Systems

Web page: <http://th.physik.uni-frankfurt.de/~jr/nonlin>

### Literature

Primary literature:

- Robert C. Hilborn: *Chaos and Nonlinear Dynamics – An Introduction for Scientists and Engineers*, Oxford University Press, 2nd ed., 2000 [Lehrbuchsammlung]
- Steven H. Strogatz: *Nonlinear Dynamics and Chaos*, Perseus Books, 1994
- Heinz Georg Schuster: *Deterministic Chaos – An Introduction*, Wiley-VCH, 4th ed. 2004 (2nd ed. 1989)

Additional books:

- Tamas Tel and Marton Gruiz: *Chaotic Dynamics – An Introduction based on Classical Mechanics*, Cambridge University Press, 2006
- J.M.T. Thompson and H.B. Stewart: *Nonlinear Dynamics and Chaos – Geometrical Methods for Engineers and Scientists*, Wiley, 1986
- P.G. Drazin: *Nonlinear Systems*, Cambridge University Press, 1992
- Heinz-Otto Peitgen, Hartmut Jürgens, and Dietmar Saupe: *Chaos and Fractals. New Frontiers of Science*, Springer, 1992
- John Argyris, Gunter Faust, and Maria Haase: *Die Erforschung des Chaos*, Vieweg, 1995
- Claudius Gros: *Complex and Adaptive Dynamical Systems – A Primer*, Springer, 2008

Software:

- Brian Davies: *Exploring Chaos*, Perseus Books, 2004  
Chaos for Java Software: [www.maths.anu.edu.au/~briand/chaos](http://www.maths.anu.edu.au/~briand/chaos)
- *Visions of Chaos*,  
Simulation Software (Windows): <http://softology.com.au/voc.htm>
- Richard H. Enns and George C. McGuire: *Nonlinear Physics with Maple for Scientists and Engineers*, Birkhäuser, 1997

- MAPLE worksheets and manuscript by Hans Jürgen Lüdde:  
<http://th.physik.uni-frankfurt.de/~luedde/NonlDyn/index.html>

Book Chapter on Nonlinear Dynamics:

- Walter Greiner: *Classical Mechanics: Systems of Particles and Hamiltonian Dynamics*, Springer, 2002. Section VII: Nonlinear Dynamics  
(German: *Mechanik 2*, Harri Deutsch, 6. Aufl. 1998)  
<http://th.physik.uni-frankfurt.de/~jr/nonlin/bookchapter.pdf>