

Holomorphic dynamics in dimension one : some advanced topics

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Abstract:

In these lectures we pursue the study of one dimensional holomorphic dynamical systems using analytical and ergodic theoretical tools with a special emphasis on bifurcations phenomena.

1. Sullivan non-wandering theorem
2. Mane-Sad-Sullivan theory of bifurcations.
3. The Mandelbrot set.
4. Oseledets multiplicative ergodic theorem.
5. Lyapunov exponent and bifurcations.

Prerequisites:

Elementary topology, Complex analysis, Functional analysis, Measure theory, Our first semester lectures.

References:

1. F. BERTELOOT AND V. MAYER, *Rudiments de dynamique holomorphe*. Société Mathématique de France, Paris, 2001.
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3. X. BUFF AND J.H. HUBBARD, *Dynamics in one complex variable*. Matrix Edition, Ithaca, NY (to appear).
4. A. KATOK - B. HASSELBLATT, *Introduction to the modern theory of dynamical systems* Cambridge University Press, 1995.
5. J. MILNOR *Dynamics in one complex variable*. Third edition. Annals of Mathematics Studies, 160. Princeton University Press, Princeton, NJ (2006)
6. M. VIANA, *Lectures on Lyapunov exponents*. Cambridge studies on advanced mathematics, 2015.