

GLOBAL ATTRACTORS AND THEIR PROPERTIES

FEBRUARY 2017

TOMASZ DLOTKO

INSTITUTE OF MATHEMATICS, POLISH ACADEMY OF SCIENCES

ABSTRACT. The theory of global attractors is nowadays a well developed part of the dynamical systems theory and several monographs, starting from 1980th, were devoted to that notion.

I will recall shortly the definitions of the (global) attractor used in the theory of infinite dimensional dynamical systems and present certain typical examples of attractors for equations of mathematical physics. Recall next basic theorems devoted to existence of the global attractor. Finally, discuss their basic properties including (eventual) finite topological dimension and the inside structure.

Several extensions/specifications of the notion of global attractor can be found in the literature, introduced mostly because the structure of original object is often complicated. Also, numerical studies of the attractors are in general not easy. I will recall some of that extensions.

REFERENCES

- [1] R. Temam, *Infinite-Dimensional Dynamical Systems in Mechanics and Physics*, Springer, New York, 1988.
- [2] J.K. Hale, *Asymptotic Behavior of Dissipative Systems*, AMS, Providence, RI, 1988.
- [3] A.V. Babin, M. Vishik, *Attractors for Evolution Equations*, North-Holland, Amsterdam, 1992.
- [4] J.W. Cholewa, T. Dlotko, *Global Attractors in Abstract Parabolic Problems*, Cambridge University Press, Cambridge, 2000.
- [5] J.C. Robinson, *Infinite-Dimensional Dynamical Systems*, Cambridge University Press, Cambridge, 2001.