On the interplay between non-linear and linear dynamics

Alfred Peris

Universitat Politècnica de València (Spain)

Abstract

In this talk we will report on several results that show the interplay between non-linear and linear dynamics. Usually, non-linear dynamics deals with compact phase spaces, in general low dimensional, while phase spaces in linear dynamics are far from being compact, and the interesting ones are infinite dimensional. Nevertheless several results show that there is a rich interplay, in both directions, and that both fields can benefit from it.

References.

[1] A. Abbar, C. Coine, and C. Petitjean, *On the dynamics of Lipschitz operators*, preprint, 2020.

[2] S. Bartoll, F. Martínez-Giménez, and A. Peris, *Operators with the specification property*, J. Math. Anal. Appl. **436** (2016), 478–488.

[3] N.S. Feldman, *Linear Chaos?*, https://feldman.academic.wlu.edu/files/pdffiles/LinearChaos.pdf, 2001.

[4] M. Murillo-Arcila and A. Peris, *Chaotic behaviour on invariant sets of linear operators*, Integr. Equ. Oper. Theory **81** (2015), 483-497.

[5] A. Peris, *Chaotic polynomials on Banach spaces*, J. Math. Anal. Appl. **287** (2003), no. 2, 487-493.

[6] V. Protopopescu, *Linear vs nonlinear and infinite vs finite: an interpretation of chaos*, Oak Ridge National Laboratory Report TM-11667, Oak Ridge, TN, 1990.