

# SEMINAR

## Grupo de Análise Funcional e Aplicações Functional Analysis and Applications Group

### On the structure of the infinitesimal generators of semigroups with discrete Lyapunov functionals

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#### Abstract

Dynamical systems generated by scalar reaction-diffusion equations enjoy special properties that lead to a very simple structure for the semiflow. Among these properties, the monotone behavior of the number of zeros of the solutions plays an essential role. This discrete Lyapunov functional contains important information on the spectral behavior of the linearization and leads to a Morse-Smale description of the dynamical system.

Other systems, like the linear scalar delay differential equations under monotone feedback conditions, possess similar kinds of discrete Lyapunov functionals.

Here we discuss and characterize classes of linear equations that generate semiflows which preserve the order given by the discrete Lyapunov function.

This is based on a joint work with Giorgio Fusco (arXiv 2306.10403).

**Room Sousa Pinto**  
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