

Siete invitati ai seminari di ricerca presso il Dipartimento di Matematica e

📍 **Aula A3**

📅 **giovedì 7 maggio 2026**

🕒 **Ore 12:30**

Speaker:

Alexey Karapetyants

Southern Federal University, Rostov on Don

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Aggrandization of spaces: a general approach and applications

Abstract: We base our study recent work on the so-called local aggrandization of Lebesgue spaces and extend this approach to the case of arbitrary Banach spaces of functions on metric spaces. We show that grand spaces of holomorphic functions can be equivalently defined in terms of aggrandization associated only with the boundary.

Nonlinear Fourier transform for soliton signal processing.

Abstract: The possibility of soliton propagation in optical fibers was first demonstrated in 1973, initiating a broad program of theoretical and experimental research on nonlinear pulse dynamics, soliton communications, and fiber-laser systems. Despite this early progress, practical exploitation of soliton-based technologies remained limited for decades, largely due to technological limitations in hardware and digital signal processing. Recently, the nonlinear Fourier transform (NFT) has revitalized the field by offering a mathematically consistent spectral framework for the analysis of nonlinear wave propagation, thereby enabling new approaches to signal representation and processing in optical fibers. In this talk, we propose a new framework for computing both the direct and inverse nonlinear Fourier transform (NFT), highlighting its key features and advantages over existing approaches and illustrating its performance with numerical examples.

Cordiali saluti

Luca Zampogni