SCUOLA
NORMALE
SUPERIORE

SEMINARIO DI MATEMATICA

Giovedì 21 marzo 2019
ore 15:00

Scuola Normale Superiore
Pisa
Aula Mancini

Vladimir Druskin

(*Worcester Polytechnic Institute*)

Terrà un seminario dal titolo:

"Embedding properties of network realizations of reduced order models with applications to inverse scattering and data science"

Abstract:
Continued fractions are known since antiquity as the most compact representations of numbers. At the end of the 19th century Stieltjes connected them with physics. This connection gave rise to network syntheses in the first half of the 20th century that was at the base of modern electronics design and consecutively to model order reduction (MOR) that tremendously impacted many areas of engineering by enabling efficient compression of the underlining dynamical systems. In his seminal 1950s works, Krein realized that in addition to their compressing properties, Stieltjes continued fractions can be used to embed the data back into the state space of the underlying dynamical system via special mechanical networks known as Stieltjes strings. Such networks can learn the underlying PDE system from the data (transfer function) via rigorously chosen hyper-parameters. Among many application of this powerful
approach we discuss the following two:
1. Imaging in strongly scattering media with waves (e.g.,seismic exploration) via data-driven MOR.
2. Reduced order graph-Laplacians and efficient cluster analysis of big data sets.

Tutti gli interessati sono invitati a partecipare.

Classe di Scienze

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