

Seminari di Matematica

Nell'ambito delle attività di ricerca coordinate dal Prof. Luciano Lopez,

la **Prof.ssa Cecilia Pagliantini**,
del Dipartimento di Matematica Università di Pisa,

terrà presso il Dipartimento di Matematica
dell'Università degli Studi di Bari Aldo Moro,
la seguente conferenza:

“Model order reduction of parametric Hamiltonian systems on matrix manifolds”

il 19 Settembre 2023 alle ore 15:30 in aula VI

Abstract:

In real-time and many-query simulations of parametric differential equations, computational methods need to face high computational costs to provide sufficiently accurate and numerical solutions. Model order reduction aims at constructing low-complexity high-fidelity surrogate models that allow rapid and accurate solutions under parameter variation. The development of reduced order models for Hamiltonian systems is challenged by several factors: (i) failing to preserve the geometric structure encoding the physical properties of the dynamics, such as invariants of motion or symmetries, might lead to instabilities and unphysical behaviors of the resulting approximate solutions; (ii) the slowly decaying Kolmogorov n -width of transport-dominated and non-dissipative phenomena demands large reduced spaces to achieve sufficiently accurate approximations; and (iii) nonlinear operators require hyper-reduction techniques that preserve the gradient structure of the flow velocity. We will discuss how to address (some of) these aspects via a structure-preserving nonlinear reduced basis approach based on dynamical low-rank approximation.

La S.V. è cordialmente invitata a partecipare.

Bari, 04.09.2023

F.to **Prof.ssa Anna Maria Candela**