

PhD Course

Nonlinear Solvers, Trust-Region and Multilevel/Domain-Decomposition Methods

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He will visit DISAT (Como) from 8 October to 7 November 2026, hosted under the INdAM Visiting Professor Programme 2026–27.

Programme

The course covers Newton-type methods for nonlinear systems, trust-region strategies, and their extension to multilevel and domain-decomposition preconditioning for large-scale nonlinear optimization.

Date	Time	Room	Topic
Wen 14 Oct 2026	11:00-13:00	2.10	Nonlinear systems, Newton-path, error control of Newton's iteration
Thu 15 Oct 2026	11:00-13:00	V4.15	Trust-region methods and relation to Newton's method
Tue 20 Oct 2026	14:00-16:00	VP3	Co-/contra-variant setting of Newton's method; non-linear preconditioning (right/left)
Thu 22 Oct 2026	11:00-13:00	V4.15	Design of Multilevel and Domain Decomposition methods – Part I
Tue 27 Oct 2026	14:00-16:00	VP3	Design of Multilevel and Domain Decomposition methods – Part I
Thu 29 Oct 2026	11:00-13:00	V4.15	ASPIN (Additive Schwarz Preconditioned Inexact Newton)
Tue 3 Nov 2026	14:00-16:00	VP3	APTS/MPTS (preconditioned trust-region method) – Part I
Thu 5 Nov 2026	11:00-13:00	V4.15	APTS/MPTS (preconditioned trust-region method) – Part II

Link Teams

<https://teams.microsoft.com/meet/390481347129693?p=aiv3IQz3A3lU8mKCIn>

Project for the exam

Implementation of APTS/MPTS and application to a problem in nonlinear mechanics or in network training

Notes

Two more lectures will be given by Alena Kopanicakova in November.