



UNIVERSITÀ
DEGLI STUDI
DI PADOVA



INGEGNERIA CIVILE EDILE E
AMBIENTALE

Professor John Pearson, as a visiting scientist at the Department ICEA, will deliver the following seminars in the framework of the PhD programme in Civil Environmental and Architectural Engineering:

An Introduction to Numerical Methods for PDE-Constrained Optimization

Tuesday, 9 December, 15:30, Sala Polivalente, Department ICEA, via Marzolo 9

Abstract. We give an overview of the structure of PDE-constrained optimization problems, approaches for deriving optimality conditions on the discrete or continuous level, gradient descent and “all-at-once”-based methods for their solution, and linear algebra strategies for solving huge-scale linear systems in the latter case.

Recent Developments in Numerical Methods for PDE-Constrained Optimization

Wednesday, 10 December, 15:30, Sala Polivalente, Department ICEA, via Marzolo 9

Abstract. We survey some of the speaker’s recent work in accelerating iterative methods for solving PDE-constrained optimization problems, including how to tackle problems from fluid dynamics, how to devise solvers which may be parallelized over the time variable, and how to generalize methodology for classical saddle-point systems (which are ubiquitous when solving optimization problems with constraints) to systems with larger numbers of blocks.

John Pearson is full professor at the School of Mathematics, The University of Edinburgh. He is Personal Chair of Scientific Computing and Director of Research.

His research interests are: Numerical analysis and industrial applications; Numerical linear algebra; Computational optimization; PDE-constrained optimization and applications; Optimal control of fluid flow; Interior point methods for quadratic and nonlinear programming; Preconditioning.