ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Prof. Fabio Nobile
Mathematics Institute of Computational Science and Engineering - MATHICSE

SEMINAR OF NUMERICAL ANALYSIS

➢ **THURSDAY 5 DECEMBER 2013 - ROOM MA A3 31 - 16h15**

Dr. Marco VERANI (Polytecnico di Milano, Italy) will present a seminar entitled :

"Adaptive Fourier-Galerkin methods"

Abstract:

We study the performance of adaptive Fourier-Galerkin methods in a periodic box in $\mathbb{R}^d$ with dimension $d \geq 1$. These methods offer unlimited approximation power only restricted by solution and data regularity. They are of intrinsic interest but are also a first step towards understanding adaptivity for the hp-FEM. We examine two nonlinear approximation classes, one classical corresponding to algebraic decay of Fourier coefficients and another associated with exponential decay. We study the sparsity classes of the residual and show that they are the same as the solution for the algebraic class but not for the exponential one. This possible sparsity degradation for the exponential class can be compensated with coarsening, which we discuss in detail. We present several adaptive Fourier algorithms, prove their contraction and examine the cardinality of the activated sets. (Joint work with C. Canuto and R.H. Nochetto)

Lausanne, 28 October 2013/FN/fb
