



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Prof. Daniel Kressner

Mathematics Institute of Computational Science and Engineering - MATHICSE

SEMINAR OF NUMERICAL ANALYSIS

➤ **WEDNESDAY 30 OCTOBER 2013 - 16 h 15, ROOM GR A3 30**

Dr. Stefan Güttel, (University of Manchester, School of Mathematics, UK) will present a seminar entitled:

"Parameter optimization of rational Krylov methods and applications"

Abstract:

Some problems in scientific computing, like the forward simulation of electromagnetic waves in geophysical prospecting, can be solved via approximation of $f(A)b$, the action of a large matrix function $f(A)$ onto a vector b . Rational Krylov methods are very popular for these computations, and the choice of parameters in these methods is an active area of research. We provide an overview of different approaches for obtaining (in some sense) optimal parameters, with an emphasis on the exponential and resolvent function, and the square root. If time permits, we also discuss a surprising new application of the rational Arnoldi method for generating near-optimal absorbing boundary layers for indefinite Helmholtz problems.

Lausanne, 17 October 2013/DK/cr

The seminars taking place at the Section of Mathematics are announced on internet address : [www
http://mathicse.epfl.ch/seminars](http://mathicse.epfl.ch/seminars)