



Wir laden recht herzlich zu einem Vortrag im Rahmen des

Oberseminars Numerische Optimierung

ein:

Herr Pierre Marchand

(University of Bath)

Schwarz Methods and boundary integral equations

Dienstag, 14. Januar 2020

Beginn: **10:15 Uhr**

Raum: **D406**

Interessenten sind herzlich willkommen!

S. Volkwein, G. Ciaramella

Abstract: Boundary integral equations allow to reformulate partial differential equations on the boundary of the considered domain using non-local integral operators. Widely used in acoustics, electromagnetism and mechanics, they have the advantage to reduce the dimension of the geometric domain and they naturally satisfy conditions at infinity for problems on unbounded domains. But the matrices obtained after discretisation have the disadvantage to be dense, so that iterative linear solvers, such as conjugated gradient or GMRes, are usually preferred compared to direct solvers. To stabilise the number of iterations of these solvers with respect to the mesh size, a classical technique is to use a preconditioner. In this talk, I will first introduce Schwarz methods and boundary integral equations, and then I will present how to precondition the matrices stemming from the boundary element method using Schwarz preconditioners and a particular coarse space named GenEO whose construction is based on Generalized Eigenproblems in the Overlaps. This is a joint work with Xavier Claeys and Frédéric Nataf.