

DREXEL ANALYSIS SEMINAR

May 22, 2015

3-3:50 PM, Korman 245

Speaker: Jean-Luc Bouchot (RWTH Aachen)

Title: A multi-level compressed sensing Petrov–Galerkin method for the approximation of parametric PDEs

Abstract: In this talk, we review the use of compressed sensing and its weighted version in the context of high dimensional parametric and stochastic PDEs. We see that under some rather weak summability and ellipticity assumptions, the polynomial chaos expansion of the solution map shows some compressibility property. We further derive a multi-level scheme to speed up the calculations, leading to a method that has a computational cost in the order of a single PDE solve at the finest level of approximation and still has reliable guarantees. This is based on joint work with Benjamin Bykowski, Holger Rauhut, and Christoph Schwab.