Tensor methods for nonconvex optimization

Coralia Cartis
University of Oxford, United Kingdom
cartis@maths.ox.ac.uk

We consider the advantages of having and incorporating higher- (than second-) order derivative information inside regularization frameworks, generating higher-order regularization algorithms that have better complexity, universal properties and can certify higher-order criticality of candidate solutions. Time permitting, we also discuss inexact settings where problem information and smoothness assumptions are weakened, without affecting the algorithms' complexity. Efficient solution of some higher-order polynomial subproblems will also be discussed.

Joint work with Nick Gould (RAL, UK), Philippe Toint (University of Namur, Belgium) and Kate Wenqi Zhu (University of Oxford).