Lauren Hanson

Multilevel Algorithms for Large Scale Interior Point Methods in Bound Constrained Optimization

Emory University
Department of Mathematics and Computer Science
400 Dowman Drive
Atlanta
GA 30322
lrhanso@mathcs.emory.edu
Michele Benzi
Eldad Haber

We develop and compare multilevel algorithms for solving bound constrained nonlinear variational problems via interior point methods. Several equivalent formulations of the linear systems arising at each iteration of the interior point method are compared from the point of view of conditioning and iterative solution. Furthermore, we show how a multilevel continuation strategy can be used to obtain good initial guesses ("hot starts") for each nonlinear iteration. A minimal surface problem is used to illustrate the various approaches. (Joint work with Michele Benzi and Eldad Haber)