

# On the convergence and complexity of trust-region and regularization methods for unconstrained optimization

Geovani Nunes Grapiglia\*

\*Universidade Federal do Paraná

## Resumo

A nonlinear stepsize control framework for unconstrained optimization was recently proposed by Toint (Optim Methods Softw 28:82-95, 2013), providing a unified setting in which the global convergence can be proved for trust-region algorithms and regularization schemes. The original analysis assumes that the Hessians of the models are uniformly bounded. This talk discusses the global convergence of the nonlinear stepsize control algorithm when the norm of the Hessians can grow by a constant amount at each iteration. The worst-case complexity is also investigated. The results obtained for unconstrained smooth optimization are extended to some algorithms for composite nonsmooth optimization and unconstrained multiobjective optimization as well.

This is a joint work with Professor Jinyun Yuan (UFPR) and Professor Ya-xiang Yuan (Chinese Academy of Sciences).