A variable-norm trust-region method for unconstrained minimization and its cubic-regularization version [1]

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Resumo/Abstract:

Keywords: Smooth unconstrained minimization, cubic modeling, regularization, Newton-type methods.

This talk is based in joint papers with Marcos Raydan, from the Universidade Simón Bolívar, Venezuela. We introduce a trust-region method with variable norms for unconstrained minimization, proving standard asymptotic convergence results, and discussing the impact of this method in Global Optimization. We show that, with a simple modification with respect to the sufficient descent condition and replacing the trust-region approach with a suitable cubic regularization, the complexity of this method for finding approximate first-order stationary points is $O(\varepsilon^{-3/2})$. We also prove a complexity result with respect to second-order stationarity. Some numerical experiments illustrate the effect of the modification on practical performance.