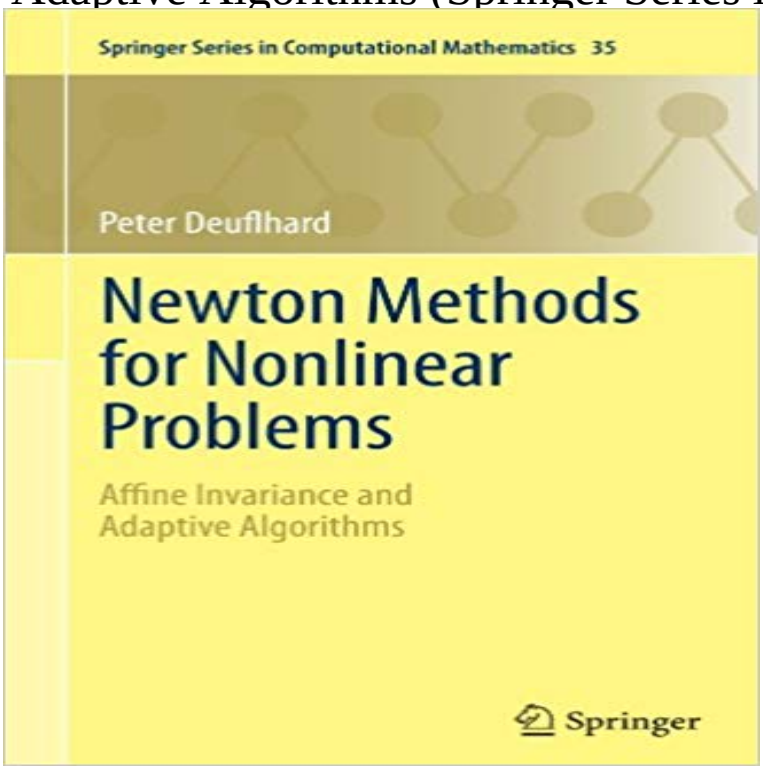
Newton Methods for Nonlinear Problems: Affine Invariance and Adaptive Algorithms (Springer Series in Computational Mathematics)



This book deals with the efficient numerical solution of challenging nonlinear problems in science and engineering, both in finite dimension (algebraic systems) and in infinite dimension (ordinary and partial differential equations). Its focus is on local and global Newton methods for direct problems or Gauss-Newton methods for inverse problems. The term affine invariance means that the presented algorithms and their convergence analysis are invariant under one out of four subclasses of affine transformations of the problem to be solved. Compared to traditional textbooks, the distinguishing affine invariance approach leads to shorter theorems and proofs and permits the construction of fully adaptive algorithms. Lots of numerical illustrations, comparison tables, and exercises make the text useful in computational mathematics classes. At the same time, the book opens many directions for possible future research.

Newton Methods for Nonlinear Problems: Affine Invariance and P. Deuflhard: Newton Methods for Nonlinear Problems. Affine Invariance and Adaptive Algorithms. Series Computational Mathematics 35, Springer (2004). **Deuflhard, Prof. Dr. Dr. h.c. Peter Zuse Institute Berlin (ZIB)** Affine Invariance and Adaptive Algorithms, Springer, 2006, BibTeX . Nonlinear Steady State Problems, ZIB-Report 02-14 (Appeared in: P. Deuflhard: Newton Methods for Nonlinear Problems. Series Computational Mathematics, 35), PDF **Publications / Books** Sep 5, 2011 Newton Methods for Nonlinear Problems. Volume 35 of the series Springer Series in Computational Mathematics pp 7-41. Date: 05 September **P. Deuflhard/Research Areas/Special Topics/Nonlinear elliptic PDEs** Newton Methods for Nonlinear Problems: Affine Invariance and Adaptive Algorithms (Springer Series in Computational Mathematics) (Englisch) Taschenbuch **Systems of Equations: Local Newton Methods - Springer** Newton Methods For Nonlinear Problems: Affine Invariance and Adaptive Algorithms (Springer Series in Computational Mathematics) (Englisch) Taschenbuch **P. Deuflhard/Research Areas/Special Topics/Parameter** P. Deuflhard: Newton Methods for Nonlinear Problems. Affine Invariance and Adaptive Algorithms. Series Computational Mathematics 35, Springer (2004). **Least Squares Problems: Gauss-Newton Methods - Springer** The term affine invariance means that the presented

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Publisher: Springer. **Newton Methods for Nonlinear Problems: Peter Deuflhard** Newton Methods for Nonlinear Problems. Affine Invariance and Adaptive Algorithms. This book deals with the efficient numerical solution of challenging Sep 5, 2011 Chapter. Newton Methods for Nonlinear Problems. Volume 35 of the series Springer Series in Computational Mathematics pp 109-172. **Newton Methods for Nonlinear Problems: Affine - Google Books** P. Deuflhard: Newton Methods for Nonlinear Problems. Affine Invariance and Adaptive Algorithms. Series Computational Mathematics 35, Springer (2004). **Newton Methods for Nonlinear Problems: Affine Invariance and** P. Deuflhard. Newton Methods for Nonlinear Problems. Affine Invariance and Adaptive Algorithms. Series: Springer Series in Computational Mathematics, Vol.