The implicit function theorem : history, theory, and applications /

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Monografía

The implicit function theorem is part of the bedrock of mathematics analysis and geometry. Finding its genesis in eighteenth century studies of real analytic functions and mechanics, the implicit and inverse function theorems have now blossomed into powerful tools in the theories of partial differential equations, differential geometry, and geometric analysis. There are many different forms of the implicit function theorem, including (i) the classical formulation for Ck functions, (ii) formulations in other function spaces, (iii) formulations for non-smooth function, (iv) formulations for functions with degenerate Jacobian. Particularly powerful implicit function theorems, such as the Nash-Moser theorem, have been developed for specific applications (e.g., the imbedding of Riemannian manifolds). All of these topics, and many more, are treated in the present volume. The history of the implicit function theorem is a lively and complex store, and intimately bound up with the development of fundamental ideas in analysis and geometry. This entire development, together with mathematical examples and proofs, is recounted for the first time here. It is an exciting tale, and it continues to evolve. The Implicit Function Theorem is an accessible and thorough treatment of implicit and inverse function theorems and their applications. It will be of interest to mathematicians, graduate/advanced undergraduate stunts, and to those who apply mathematics. The book unifies disparate ideas that have played an important role in modern mathematics. It serves to document and place in context a substantial body of mathematical ideas

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