An algorithm for the computation of the generalized solution for implicit systems*

Mihaela Roxana Nicolai†

Abstract

We discuss the solution of implicit systems in the critical case, i.e. when the classical assumptions of the implicit functions theorem are not satisfied. The generalized solution introduced bellow solves such cases and it may not be a manifold. In certain examples, it may have a complex structure and its approximation is nontrivial. We present here an algorithm for the approximation of the generalized solution. Numerical tests are also included.

1 Introduction

In this paper, we discuss the approximation of the solution for implicit functions systems, in the critical case. The method we use was introduced in [6] and was further studied in [4] and [7]. It is based on iterated systems of ordinary differential equations, to obtain the solution in parametric form.

We investigate a new algorithm solving this question.

This paper is organized as follows. In section two we recall some preliminary notions and results from [6] and [4]. Section three describes the

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†`roxana.nicolai@gmail.com`, "Simion Stoilow" Institute of Mathematics of the Romanian Academy