

Implicit function theorems for iterative processes

ASEN L. DONTCHEV

Mathematical Reviews
Ann Arbor, MI, USA
e-mail: ald@ams.org

Abstract

In the classical setting of the implicit function theorem, an equation $f(p, x) = 0$ is solved for x in terms of a parameter p . The questions center on the extent to which this solution mapping can be expressed, at least locally, by a function from p to x , and if so, what properties can be guaranteed for that function. In this talk we move into wider territory where, although the questions are basically the same, it is no longer an equation $f(p, x) = 0$ that is being solved, but a condition capturing a more complicated dependence of x on p , and the solution mapping may be set-valued. Motivations come from optimization and models of equilibrium. A far reaching extension of the implicit function theorem paradigm for iterative processes will be shown.