

**Cash, J. R.**

**On the numerical integration of nonlinear two-point boundary value problems using iterated deferred corrections. II: The development and analysis of highly stable deferred correction formulae.** (English) [Zbl 0658.65070](#)  
*SIAM J. Numer. Anal.* 25, No. 4, 862-882 (1988).

[For part I see *Comput. Math. Appl.*, Part A 12, 1029-1048 (1986; [Zbl 0618.65071](#)).]

Iterated deferred correction methods are considered to boundary value problems of ordinary differential equations. So far, the process of deferred correction is normally an explicit one, which causes the loss of stability. To make the process applicable to the problems with “rough” solutions (or “stiff” problems), the author considers the idea of using implicit deferred corrections, which allows the derivation of high-order methods that maintain the good stability properties of the underlying low-order formula. Using these ideas, a highly stable, variable-order deferred correction scheme is derived, and the performance of its implementation is compared numerically with that of COLSYS and D02GAF on some linear test problems.

Reviewer: [T.Mitsui](#)

**MSC:**

- [65L10](#) Numerical solution of boundary value problems involving ordinary differential equations
- [34B15](#) Nonlinear boundary value problems for ordinary differential equations

Cited in **21** Documents

**Keywords:**

type-insensitive method; stiff problems; Iterated deferred correction methods; implicit deferred corrections; high-order methods; stability; variable-order; linear test problems

**Full Text:** [DOI](#)