

PACKAGE ID - 000752SPARC00 CVOICE

KWIC TITLE - Stiff/Nonstiff Ordinary Differential Eqn
Solver in C, Direct and Iterative Metho

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LIMITATION CODE -UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 09/02/1994 **PUBLICATION DATE** - 09/01/1994

DESCRIPTION - CVOICE is a package written in ANSI standard C for solving initial value problems for ordinary differential equations. It solves both stiff and non stiff systems. In the stiff case, it includes a variety of options for treating the Jacobian of the system, including dense and band matrix solvers, and a preconditioned Krylov (iterative) solver.

PACKAGE CONTENTS - Media Directory; Software Abstract; UCRL-MA-118618; Media Includes Source Code, Auxiliary Material, Sample Problem Input and Output Data, ReadMe File;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 3.5 Diskette

METHOD OF SOLUTION - Integration is by Adams or BDF (Backward Differentiation Formula) methods, at user option. Corrector iteration is by functional iteration or Newton iteration. For the solution of linear systems within Newton iteration, users can select a dense solver, a band solver, a diagonal approximation, or a preconditioned Generalized Minimal Residual (GMRES) solver. In the dense and band cases, the user can supply a Jacobian approximation or let CVOICE generate it internally. In the GRMES case, the preconditioner is user-supplied.

COMPUTER - SUN SPARC

OPERATING SYSTEMS - Unix

PROGRAMMING LANGUAGES - ANSI-C

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - CVOICE is organized in a highly modular manner. The basic integrator module is separate from, and independent of, the linear system solvers. Thus the set of linear solvers can be expanded in the future, with no impact on the integrator. All operations on N-vectors (where N is the system size) are isolated

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UNIQUE FEATURES - (CONT) in a set of vector kernels.

RELATED SOFTWARE - CVOICE provides the combined capabilities of two older Fortran packages, VODE and VODPK.

OTHER PROG/OPER SYS INFO - The package supplied consists of a single archive file, cvode.tar. Installation from this file assumes a Unix system with the tar utility.

TIME REQUIREMENTS - Highly dependent on machine and problem.

REFERENCES - S.D. Cohen and A.C. Hindmarsh, CVOICE User Guide, UCRL-MA-118618, September 1994.

ABSTRACT STATUS - Release AS-IS Decmber 9, 1994.

SUBJECT CLASS CODE - P

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
C CODES
DIFFERENTIAL EQUATIONS
NUMERICAL SOLUTION

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/DP

PACKAGE TYPE - AS - IS