

**PACKAGE ID** - 001218MLTPL00 VECTORS

**KWIC TITLE** - Fortran 90 Source Module

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**LIMITATION CODE** -COPY           **AUDIENCE CODE** - LIM

**COMPLETION DATE** - 08/01/1996   **PUBLICATION DATE** - 08/01/1996

**DESCRIPTION** - A major advance contained in the new Fortran 90 language standard is the ability to define new data types and the operators associated with them. Writing computer code to implement computations with real and complex three dimensional vectors and dyadics is greatly simplified if the equations can be implemented directly, without the need to code the vector arithmetic explicitly. The Fortran 90 module VECTORS contains source code which defines new data types for real and complex 3-dimensional vectors and dyadics, along with the common operations needed to work with these objects. Routines to allow convenient initialization and output of the new types are also included. In keeping with the philosophy of data abstraction, the details of the implementation of the data types are maintained private, and the functions and operators are made generic to simplify the combining of real, complex, single and double precision vectors and dyadics.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; Media Includes Source Code;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 3.5 Diskette

**METHOD OF SOLUTION** - The module implements real and complex vectors in both single and double precision numerical kinds.

**COMPUTER** - MLT-PLTFM

**OPERATING SYSTEMS** - Windows 95, Windows NT, Solaris

**PROGRAMMING LANGUAGES** - Fortran 90

**SOFTWARE LIMITATIONS** - VECTORS is used in conjunction with a user supplied main program which contains a Fortran 90 use statement which references the module vectors. VECTORS consists of two Fortran 90 source files: vectors.f90 and roots.f90

**SOURCE CODE AVAILABLE (Y/N)** - Y

**UNIQUE FEATURES** - Allows programmer to implement computations with real and complex three dimensional vectors and dyadics without the need to code the vector arithmetic explicitly, greatly simplifying the

**PACKAGE ID** - 001218MLTPL00 VECTORS

**UNIQUE FEATURES - (CONT)** code.

**HARDWARE REQS** - Determined by FORTRAN 90 compiler used with the source.

**ABSTRACT STATUS** - Released AS-IS August 26, 1998.

**SUBJECT CLASS CODE** - Z

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
V CODES  
FORTRAN  
DATA

**EDB SUBJECT CATEGORIES** -  
990200

**SPONSOR** - DOE/DP

**PACKAGE TYPE** - AS - IS