

**PACKAGE ID** - 000298I433100 BIMOND

**KWIC TITLE** - Monotone Bivariate Interpolation Code

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

**COMPLETION DATE** - 01/01/1984   **PUBLICATION DATE** - 10/22/1984

**DESCRIPTION** - BIMOND is a FORTRAN 77 subroutine for piecewise bicubic interpolation to data on a rectangular mesh, which reproduces the monotonicity of the data. A driver program, BIMOND1, is provided which reads data, computes the interpolating surface parameters, and evaluates the function on a mesh suitable for plotting.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; UCID-21143;  
Media Includes Source Code, Sample Problem Input and Output;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 CD Rom

**METHOD OF SOLUTION** - Monotonic piecewise bicubic Hermite interpolation is used.

**COMPUTER** - IBM4331

**OPERATING SYSTEMS** - MVS

**PROGRAMMING LANGUAGES** - FORTRAN 77

**SOFTWARE LIMITATIONS** - The current version of the program can treat data which are monotone in only one of the independent variables, but cannot handle piecewise monotone data.

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

**RELATED SOFTWARE** - BIMOND calls subroutine PCHIM from the univariate piecewise cubic interpolation package PCHIP. This subroutine is included as a separate file in the BIMOND package.

**OTHER PROG/OPER SYS INFO** - The only new FORTRAN 77 features used are IF-THEN-ELSE control statements, PARAMETER statements, and quote delimiters for character strings. A minimum of four characters per word is assumed.

**HARDWARE REQS** - On the IBM3033 1028K bytes of virtual storage and 216K bytes of system storage were required. Logical unit 5 is used for

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**HARDWARE REQS - (CONT)** input, 6 for printed output, 7 for plotted output, and 59 for interactive terminal communication.

**TIME REQUIREMENTS** - Running time varies with the computer used. Less than 8 CPU seconds were required on an IBM3033 to compile and execute the sample problem.

**REFERENCES** - F.N. Fritsch and R.E. Carlson, BIMOND: Monotone Bivariate Interpolation Code, UCID-30197, December 1983; BIMOND, NESC No. 1037, BIMOND Tape Description and Implementation Information, National Energy Software Center Note 85-10, October 22, 1984\ R.E. Carlson and F.N. Fritsch, Monotone Piecewise Bicubic Interpolation, UCRL-86449, Rev. 1 Preprint, September 1983; F.N. Fritsch, PCHIP Final Specifications, UCID-30194, August 1982.

**ABSTRACT STATUS** - Abstract first distributed October 1984. BIMOND submitted December 1983, sample problem executed by NESC January 1984 on an IBM3033.

**SUBJECT CLASS CODE** - P

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
B CODES  
INTERPOLATION  
MESH GENERATION

**EDB SUBJECT CATEGORIES** -

990200

**SPONSOR** - DOE/ER

**PACKAGE TYPE** - TESTED