PACKAGE ID - 001197MLTPL00 WFSFIT

KWIC TITLE - Wilson-Fowler Spline Fit Algorithm

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

COMPLETION DATE - 01/01/1992 **PUBLICATION DATE -** 01/01/1992

DESCRIPTION - WFSFIT is a legacy algorithm introduced in the early 1960's for passing a smooth curve through a planar set of design points. WFSFIT predates b-spline methods, but is still used in some numeric control systems, e.g. APT.

PACKAGE CONTENTS - Media Directory; Software Abstract; UCID-20746; Y-1400 (Revision 1); Media includes Source Code;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 3.5 Diskette

METHOD OF SOLUTION - In generating a smooth curve, the basic idea is to come as close as possible to the true spline which minimizes the energy of the curve with a curve composed of cubic segments which are joined together to achieve continuous tangent and curvatures. This is accomplished by introducing a local u,v-coordinate system for each segment with the independent variable running along the chord. The curvature matching conditions lead to a tridiagonal nonlinear system of equations which must be solved by an iterative method.

COMPUTER - MLT-PLTFM

OPERATING SYSTEMS - Any Fortran 77 capable computer

PROGRAMMING LANGUAGES - Fortran 77

SOFTWARE LIMITATIONS - Numerical accuracy will vary with the format of floating point number representation.

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - Implements an archaic algorithm

HARDWARE REQS - Run Fortran 77

TIME REQUIREMENTS - Varies with input. Not particularly CPU intensive.

REFERENCES - A.H. Fowler and C.W. Wilson, Cubic Spline, A Curve Fitting Routine, Y-1400 (Revision 1), June 28, 1966; F.N. Fritsch, History of the Wilson-Fowler Spline, UCID-20746, April, 1986.

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REFERENCES -(CONT)
ABSTRACT STATUS - Released AS-IS 2/18/98.

SUBJECT CLASS CODE - IP

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION
W CODES
SPLINE FUNCTIONS
INTERPOLATION
MATHEMATICS
POLYNOMIALS
SERIES EXPANSION

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/DP

PACKAGE TYPE - AS - IS