

PACKAGE ID - 000428CY00001 POISSONSUPERFISH4.12

KWIC TITLE - POISSON, SUPERFISH, Magnet and RF Cavity
Design

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

COMPLETION DATE - 03/25/1993 **PUBLICATION DATE** - 03/25/1993

DESCRIPTION - POISSON, SUPERFISH is a group of codes that solve Poisson's equation and are used to compute field quality for both magnets and fixed electric potentials and RF cavity codes that calculate resonant frequencies and field distributions of the fundamental and higher modes. The group includes: POISSON, PANDIRA, SUPERFISH, AUTOMESH, LATTICE, FORCE, MIRT, PAN-T, TEKPLOT, SF01, and SHY.

PACKAGE CONTENTS - Media Directory; Release Notes; LA-UR-92-3396-ADD; POISSON Group Programs User's Guide; LA-UR-87-115; LA-UR-87-126; Media Includes Source Code, Compilation Instructions, Linking Instructions, Sample Problem Input Data;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD Rom

METHOD OF SOLUTION - The POISSON group of codes solves Maxwell's static equations (MSE's) in integral form and in two dimensions. When the MSE's are taken together with the boundary conditions, they are equivalent to a generalized form of Poisson's equations in two dimensions. POISSON uses a successive point over-relaxation method to solve the equations, while PANDIRA directly solves the block tridiagonal system of difference equations, and iteration is required only for nonlinear problems. After solving the equations, both compute the derivatives of the potential, namely the fields and their gradients, and calculate the stored energy. SUPERFISH uses the same direct solution method as PANDIRA for the Helmholtz eigenvalue problem.

COMPUTER - CRAY

OPERATING SYSTEMS - UNIX

PROGRAMMING LANGUAGES - FORTRAN 77 (99%) C (1%)

SOFTWARE LIMITATIONS - Problem size is limited only by computer hardware. Previous limitations in earlier releases due to

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SOFTWARE LIMITATIONS - (CONT) addressing method have been removed.

SOURCE CODE AVAILABLE (Y/N) - Y

RELATED SOFTWARE - This release supersedes earlier package.

OTHER PROG/OPER SYS INFO - Source files end in .f. The PSFLOT program generates POSTSCRIPT output, or can use GKS or subroutines INITT, CHRISZ, TERM, NEWPAG, AOUTST, ANMODE, MOVABS, DRWABS, and TINPUT from the proprietary Tektronix PLOT10. These routines are not included.

HARDWARE REQS - Very flexible.

TIME REQUIREMENTS - Variable

REFERENCES - M.T. Menzel and H.K. Stokes, User's Guide for the POISSON/SUPERFISH Group of Codes, LA-UR-87-115, January 1987; Gary W. Rodenz, User's Guide for the Program Front, LA-UR-92-3396 and Addendum, March 15, 1993; R. Holsinger, POISSON Group Programs User's Guide, LANL Memorandum, February 1981; Los Alamos Accelerator Code Group, Reference Manual for the POISSON/SUPERFISH Group of Codes, LA-UR-87-126.

ABSTRACT STATUS - Abstract first distributed February 1991. CRAY version submitted November 1990. Version 4.12 submitted March 1993. Released screened August 13, 1993.

SUBJECT CLASS CODE - V

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
P CODES
POISSON EQUATION
THREE-DIMENSIONAL CALCULATIONS
TWO-DIMENSIONAL CALCULATIONS
MAGNETIC FIELDS
MESH GENERATION

EDB SUBJECT CATEGORIES -

990200 430200

SPONSOR - DOE/ER

PACKAGE TYPE - SCREENED