

PACKAGE ID - 000380SUN0000 TRACE3D

KWIC TITLE - Interactive Beam-Dynamics Program

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

COMPLETION DATE - 12/01/1993 **PUBLICATION DATE** - 12/01/1993

DESCRIPTION - TRACE3D is an interactive program that calculates the envelopes of a bunched beam, including linear space-charge forces, through a user-defined system. The transport system may consist of the following elements: drift, thin lens, quadrupole, permanent magnet quadrupole, solenoid, doublet, triplet, bending magnet, edge angle (for bend), RF gap, radio-frequency-quadrupole cell, RF cavity, coupled-cavity tank, user-desired element, coordinate rotation, and identical element. The beam is represented by a 6X6 matrix defining a hyper-ellipsoid in six-dimensional phase space. The projection of this hyperellipsoid on any two-dimensional plane is an ellipse that defines the boundary of the beam in that plane.

PACKAGE CONTENTS - Media Directory; Software Abstract; Readme.file (1 page); User's Manual; LA-UR-90-4146;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD Rom

METHOD OF SOLUTION - TRACE3D assumes that all forces are linear or can be linearised. If the six coordinates of a particle are known at some location along a transport system, then at another location, the coordinates can be calculated by a single matrix multiplication.

COMPUTER - SUN

OPERATING SYSTEMS - SUNOS, UNIX

PROGRAMMING LANGUAGES - FORTRAN (60%); C (40%)

SOURCE CODE AVAILABLE (Y/N) - Y

RELATED SOFTWARE - X11, Motif

OTHER PROG/OPER SYS INFO - Make executables using make <CR>.

REFERENCES - K.R. Crandall and D.P. Rusthoi, TRACE3D Documentation, LA-UR-90-4146, December 1990; L. Singleton and C.Y.Yao, User

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REFERENCES - (CONT) Manual for Motif Trace3d.

ABSTRACT STATUS - Submitted 6/21/95.

SUBJECT CLASS CODE - V

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
T CODES
INTERACTIVE DISPLAY DEVICES
BEAM BUNCHING
SPACE CHARGE
BEAM TRANSPORT
THREE-DIMENSIONAL CALCULATIONS
LINEAR ACCELERATORS

EDB SUBJECT CATEGORIES -

990200 430200

SPONSOR - DOE/ER

PACKAGE TYPE - AS - IS