

PACKAGE ID - 001304IBMPC00 SUNS

KWIC TITLE - Sensitivity and Uncertainty Analysis Shell

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

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DESCRIPTION - SUNS (Sensitivity and Uncertainty Analysis Shell) is a 32-bit application that runs under Windows 95/98 and Windows NT. It is designed to aid in statistical analyses for a broad range of applications. The class of problems for which SUNS is suitable is generally defined by two requirements: 1. A computer code is developed or acquired that models some processes for which input is uncertain and the user is interested in statistical analysis of the output of that code. 2. The statistical analysis of interest can be accomplished using the Monte Carlo analysis. The implementation then requires that the user identify which input to the process model is to be manipulated for statistical analysis. With this information, the changes required to loosely couple SUNS with the process model can be completed. SUNS is then used to generate the required statistical sample and the user-supplied process model analyses the sample. The SUNS post processor displays statistical results from any existing file that contains sampled input and output values.

PACKAGE CONTENTS - Media Directory; Software Abstract; SUNS User's Reference Manual; Media Includes Source Code, User's Guide, Executable Module, Sample Problem Input and Output Data, Installation Instructions;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD Rom

METHOD OF SOLUTION - SUNS consists of two software modules. The first module allows a user to define variables and the associated uncertainty distributions. Correlations between variables can also be specified. When the information is complete this module produces a text file containing the requested number of sample vectors. The user can choose Monte Carlo sampling of the distributions or a

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METHOD OF SOLUTION - (CONT) specialized form of Monte Carlo sampling called Latin Hypercube Sampling (LHS). The user-supplied process model analyzes the vectors and appends output variables to the input vectors. The SUNS post processor then performs statistical analysis on the resulting data to display various plots of input values, output results and the correlations between them.

COMPUTER - IBM PC

OPERATING SYSTEMS - Windows 95/98

PROGRAMMING LANGUAGES - NA

SOFTWARE LIMITATIONS - Variables in SUNS may be assigned one of 33 distributions defined in the software. Five of these distributions are Empirical or user defined. Such distributions are defined by up to 50 pairs of points. A maximum of 50 variables may be correlated in a group. The number of variables and the number of variable groups is limited only by the amount of RAM available and the speed of the processor.

SOURCE CODE AVAILABLE (Y/N) - Y

OTHER PROG/OPER SYS INFO - Sandia intends to continue improving and expanding the software as a substantial product of its Center for System reliability.

HARDWARE REQS - To install SUNS you will need an IBM-compatible PC with a 486 or Pentium processor. A Pentium based system is recommended. SUNS is a 32-bit Windows application and will run under Windows 95/98 and Windows NT. The installation requires approximately 5 MB of free hard drive space. The amount of RAM required to run SUNS is dependent on the memory requirements of the application you are going to use with SUNS.

ABSTRACT STATUS - Released AS-IS 6/29/1999.

SUBJECT CLASS CODE - P

KEYWORDS -
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MONTE CARLO METHOD

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/DP

PACKAGE TYPE - AS - IS