

**PACKAGE ID** - 001326IBMPC00 ELASTIC/EVIEW

**KWIC TITLE** - Elastic Scattering LIDAR Data Acquisition  
Visualization and Analysis

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

**COMPLETION DATE** - 01/01/1994   **PUBLICATION DATE** - 01/01/1994

**DESCRIPTION** - ELASTIC/EVIEW is a software system that controls an elastic scattering atmospheric Light Detection and Ranging (LIDAR) instrument. It can acquire elastic scattering LIDAR data using this system and produce images of one, two, and three-dimensional atmospheric data on particulates and other atmospheric pollutants. The user interface is a modern menu driven system with appropriate support for user configuration and printing files.

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - Media Directory; Software Abstract; Media Includes Source Code, User's Guide, Compiling Instructions, Linking Instructions, Object Module, Sample Problem Input Data, Programmer Documentation;/1 CD Rom

**METHOD OF SOLUTION** - The ELASTIC/EVIEW software interfaces to industry standard CAMAC and other commercially available digitizer modules. The angular scanning of the laser transmitter and telescope receiver were controlled via industry standard stepper motor controllers. Mathematical models for analyzing the data include 1/R<sup>2</sup> corrections for atmospheric attenuation.

**COMPUTER** - IBM PC

**OPERATING SYSTEMS** - DOS v 4 and later (unmodified)

**PROGRAMMING LANGUAGES** - Borland Turbo Pascal (98%) DOS Assembler (2% for device drivers)

**SOFTWARE LIMITATIONS** - Maximum number of 64k individual LIDAR measurement points along a single line-of-sight; no limit on angular parameters in 2D or 3D scanning or time dependent scanning (I.E. number of time-steps); single user in a DOS session.

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

**UNIQUE FEATURES** - Pollution monitoring and tracking is possible using this software with a LIDAR instrument. To our knowledge, this

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**UNIQUE FEATURES - (CONT)** software (when combined with appropriate hardware) comprises the fastest volume imaging LIDAR in the world.

**RELATED SOFTWARE** - Commercially available libraries are used for user interface management and plotting (Object Professional from Turbo Power Software, colorado Springs, Colorado; and by GRAF/DRIVE PLUS v3.0 Copyright 1991, M.K. Fleming)

**OTHER PROG/OPER SYS INFO** - The Turbo Pascal source files use PAS as their file extension, whereas the Assembler source files have an ASM extension. compiled assembler files use an OBJ file extension and executable programs have the EXE extension. Users may automate scans to take place over a period of time using a variety of input parameters which can be input to ELASTIC/EVIEW in a file using a IN file extension. Compilation time parameters that help configure the program at compile time for specific hardware and software configurations are contained in PRM and INC files. Output LIDAR data files are stored in several different file name extensions. DAT for one-dimensional data, 2D and 3D for two and three dimensional data respectively, and TD for time dependent scans along a single line of sight.

**HARDWARE REQS** - Transient digitizers of several types can be used with this program including those abiding by the CAMAC standard and other popular hardware standards (see software for detailed of hardware). IBM PC compatible requirements are for a reasonably fast 80486 or higher processor and at least 16 MB of RAM. VGA or better graphics adapter is also required.

**TIME REQUIREMENTS** - Because this set of routines is for a real-time data acquisition and visualization, time requirements are dependent on LIDAR data acquisition parameters set by the user. Scans can take anywhere from less than 1 second to several minutes depending on angular scan ranges and data averaging requirements.

**ABSTRACT STATUS** - Released AS-IS 12/9/1999

**SUBJECT CLASS CODE** - NOR

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
E CODES  
AIR POLLUTION  
TRANSPORT  
DATA ACQUISITION

**EDB SUBJECT CATEGORIES** -  
990200

**SPONSOR** - DOE

**PACKAGE TYPE** - AS - IS