

**PACKAGE ID** - 001188IBMPC00 WFS2D

**KWIC TITLE** - 2D Wavefront Sensor Analysis and Control

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

**COMPLETION DATE** - 03/07/1996   **PUBLICATION DATE** - 03/07/1996

**DESCRIPTION** - This software is designed for data acquisition and analysis of two dimensional wavefront sensors. The software includes data acquisition and control functions for an EPIX frame grabber to acquire data from a computer and all the appropriate analysis functions necessary to produce and display intensity and phase information. This software is written in Visual Basic for windows.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; Media Includes Source Code, Text Library, Object Library, User's Guide, Auxiliary Material, Object Module, Control Information, Sample Problem Input and Output Data, Programmer Documentation;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 3.5 Diskette

**METHOD OF SOLUTION** - The software finds centroids with a series of areas of interest corresponding to the lenslet array mapping. These centroids are then compared with calibration data to determine the wavefront slopes. The wavefront slopes are integrated through a numerical least squares reconstruction algorithm to provide wavefront height information.

**COMPUTER** - IBM PC

**OPERATING SYSTEMS** - MSDOS with Windows 3.1 or Windows 95.

**PROGRAMMING LANGUAGES** - Visual Basic for Windows 4.0

**SOFTWARE LIMITATIONS** - While some limitations may be imposed by the limits of memory in the machine, in general there are few limitations to the software.

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

**UNIQUE FEATURES** - This software provides the user with a way to quickly and accurately acquire data from a wavefront sensor and analyze it. It has modules that allow complete control of an EPIX model 10

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**UNIQUE FEATURES - (CONT)** or Model 12 frame grabber for data acquisition. These functions are completely integrated into the software using the window interface. Once data is acquired, the user can then view this data, and analyze it in terms of centroids, wavefront slopes, and wavefront height or phase error. Various statistics are available, and the data is saved to disk in convenient file formats.

**RELATED SOFTWARE** - This software requires Dynamic Link Libraries that are available from EPIX (M4OBJ300.DLL and PXIXL200.DLL) and Crescent Software (QPRO200.DLL).

**OTHER PROG/OPER SYS INFO** - File naming conventions are as follows: BVF Binary Image Data, AX ASCII Image Data, BSF File Header Info, PKB Centroid Data, DVB Wavefront Slope Data, WFB Wavefront Data, FT? Fit coefficient data.

**HARDWARE REQS** - IBM 486 or better with 16 MB of memory recommended. For data acquisition, the computer must also be equipped with an EPIX Model 12 or Model 10 frame grabber.

**TIME REQUIREMENTS** - Data acquisition is accomplished in 4-5 seconds. centroid finding and wavefront calculation takes 2 seconds. Wavefront reconstruction will take 40-100 sec, depending on the size of the data set.

**ABSTRACT STATUS** - Submitted 8/8/97. Released AS-IS 10/30/97

**SUBJECT CLASS CODE** - 0

**KEYWORDS** -  
COMPUTER PROGRAM DOCUMENTATION  
W CODES  
DATA ACQUISITION  
OPTICAL DISPERSION

**EDB SUBJECT CATEGORIES** -  
990200

**SPONSOR** - DOE/DP

**PACKAGE TYPE** - AS - IS