W. W. Hansen Experimental Physics Laboratory

STANFORD UNIVERSITY

STANFORD, CALIFORNIA 94305 - 4085

Gravity Probe B Relativity Mission

PROCEDURE FOR

Science Telescope Room Temperature Linearity Test

GP-B P0233   Rev -

January 16, 1998

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Prepared by: Suwen Wang   Date
Engineer

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Quality Assurance

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Hardware Manager

GP-B Procedure Document 233

Science Telescope Room Temperature Linearity

RE: Suwen Wang
ESTIMATED DURATION: 1 day.

Objective:

> Measure the linearity of the telescope at room temperature by analyzing the data collected from P230. This test is optional.

Requirements:

- Procedure to be performed by certified personnel only.
- Certified personnel include:
     Suwen Wang

Authority to redline this procedure:

   Suwen Wang

Precautions:

- No special precautions required.

Calibration:

- The scan data related to verifying the telescope performance specifications is in a format of relative numbers. Therefore, no calibration is required for the procedure.

Ground Support Equipment required:

- Centris 650 computer.
- IgorPro v. 2.0.2 software.

Expendable Materials required:

- None.

Initial Configuration:

- Telescope under test:
     Dwg No: <u>25091-201 Rev - </u>   .
                    Telescope Serial No.   <u>   </u>.

- Procedure Start Date: <u>   </u>.

1.   Procedure for measuring the linearity of the telescope:

1.1. Make a back up of the original data. Loss of original data would cause the need of reacquision of the data which might have schedule impact.

1.2. Select a data set from an X axis scan. Normalize the data at 0 and 10 arc sec.

1.3. Perform a linear fit to the data within the range of +/- 100 marcsec of the normalized signal level of 0.5 which is the optical center of the telescope.

1.4. Find the deviation of the data from the fit.

1.5. Repeat the process of 1.2 through 1.4 for Y axis scan.

1.6. More average of data points might be needed during the scan to reduce the noise of the data.

1.7. The deviation from linearity of the readout within +/- 60 marcsec is:

X axis: _____ marcsec.

Y axis: _____ marcsec.

1.8. Procedure 1 complete.

Signed: _____   Date: _____