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Gravity Probe B Relativity Mission

PROCEDURE FOR GYROSCOPE LEVITATION WITH THE DDC SUSPENSION SYSTEM
(Gyroscope Acceptance Test)

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PROCEDURE FOR GYROSCOPE LEVITATION WITH THE DDC SUSPENSION SYSTEM

This procedure is to be performed only by persons listed as certified operators of the gyroscope suspension systems.

Purpose To test the reliability of levitation and the integrity of the electrical assembly.

Experimental Conditions:

Room temperature or low temperature

3 axes suspension

DDC suspension system

Completed P0273, P0308, P0204 (for Gyroscope Commissioning Probe)

Completed P0111

System pressure less than 10^{-4}torr

Equipment:

DDC Suspension System

Gyroscope Commissioning Probe ***or***

R.T. #3 or R.T. #4

ESD precautions: Follow accepted ESD procedures.

Procedure:

I. Have a qualified operator levitate the gyroscope. (see note)

II. In the appropriate table, (**FGT #2** when performing P0272 or **FGT #3** when performing P0275) tally each of the following categories:

1. Total # of suspensions attempted after 1st levitation.
2. Number of automatic shutdowns caused by the gyroscope before the first levitation.
3. Any automatic shutdowns caused by the gyroscope.
4. Longest continual suspension time.

III. Record the DDC suspension system number and the optimal suspension parameters in the **RT-Op #1 and Lt-Op #4**.

Note: A qualified DCC operator may choose at his/her discretion to conduct the following;

1. Swap suspension cables to determine bridge and cable biases prior to levitation

2. Calibrate suspension parameters to the particular gyroscope being tested using the suspension voltages. This involves moving the gyroscope around the housing and calculating electrostatic force at various positions in the housing. This can only be done by a person expert in the physics of gyroscope levitation. Known experts authorized for this type of calibration are Robert Brumley, Bill Bencze, Dave Hipkins, Sasha Buchman, Yueming Xiao.