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Gravity Probe B Relativity Mission

PROCEDURE TO DETERMINE ASYMPTOTIC SPIN SPEED FOR SCIENCE MISSION GYROSCOPES

GP-B P0314 Rev -A

February 12, 1998

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PROCEDURE TO DETERMINE ASYMPTOTIC SPIN SPEED FOR SCIENCE MISSION GYROSCOPES

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

Equipment: Gyroscope Commissioning Facility
DDC Suspension System
Quantum Design SQUID Controller
Data Acquisition System
Germanium Thermometer Readout
dc Voltmeter

Cleanliness precautions: N/A

ESD precautions: N/A

Conditions: Gyroscope installed in the Gyroscope commissioning facility

Gyroscope levitated

The following procedures are to have been already completed: P0273, P0297 (optional), P0299, P0274, P0298, P0311, P0307 and P0276

Preparation:

- Check functionality of the spin-up heater by measuring its resistance.
- Move the gyroscope to the selected position and record the position as well as the electrode voltages.
- Pump out the spin up manifold of the probe. (***Make sure EGP pump is turned on***)
- Pump out the exhaust line of the probe.
- Close the exhaust valve and open the manual spin up valve.
- Record the values asked for in the first row of the Spin up Status Table, **LT-Op#8**.
- Complete the information asked for at the top of the Spin up Status Table, **LT-Op#8**.

Procedure: I. Start spin up according to *Procedure A of P0310* .

II Apply 12 volts dc to the spin up heater.

III Observe the probe pressure, if the probe pressure exceeds that of 4% leakage rate equivalent, turn off the flow and stop the experiment.

IV. Record data in the Spin-Up Status table **LT-Op#8** every 2 minutes.

V. After 30 minutes or once the gyroscope reaches 60 Hz, whichever comes first, turn the flow off slowly.

VI. Close the spin-up gas supply.

VĨ Turn off the heater and close the exhaust valve.

VIĨ Spin down the gyro to 5 Hz according to *Procedure B of P0310.*

IX IX. Close the gate valve and introduce 0.4 millitorr into the vacuum can, according to Procedure D of P0310, for further spin down.

X. Record the asymptotic spin speed, leakage rate and time constant in **section IV. of FGT #3**.

(optional) XI. Collect SQUID data from Helmholtz coil pick-up loops for 8 to 12 hours. Determine $\Delta I / I$ from this data and record the result in **section V. of FGT #3**.