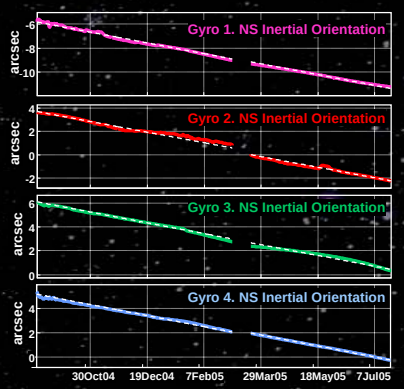
An Overview of the Gravity Probe B Program

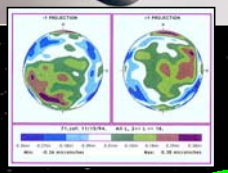
C.W. Francis Everitt and the Gravity Probe B Team

GP-B Posters at the APS:

L1.00012: Radio Imaging of the Gravity Probe B Guide Star IM Pegasi.
L1.00013: The "Core" of the Quasar 3C454.3 as the Extragalactic Reference for the Proper Motion of the Gravity Probe B Guide Star.
L1.00014: Performance of the Gravity Probe B Inertial Reference Telescope.
L1.00015: Gravity Probe B Timing System and Roll Phase Determination.
L1.00016: The Gravity Probe B SQUID Readout Detector.
L1.00017: SQUID Control, Temperature Regulation, and Signal Processing Electronics for Gravity Probe B.
L1.00018: Gravity Probe B Science Instrument Assembly (SIA).
L1.00019: Polhode Motion of the Gravity Probe-B Gyroscopes.
L1.00020: Evidence for Patch Effect Forces on the Gravity Probe B Gyroscopes.
L1.00021: Gravity Probe B Orbit Determination.
L1.00022: Simulator Technology of the Gravity Probe-B Mission.
L1.00023: Achievement of the Magnetic Environment Requirements for Gravity Probe B.
L1.00024: The Gravity Probe B Gyroscopes.
L1.00025: Gravity Probe B Gyroscope Electrostatic Suspension System (GSS).
L1.00026: The Gravity Probe B Relativity Mission (GP-B).
L1.00027: Gravity Probe B Experiment Error.
L1.00028: Gravity Probe B Science Data Analysis: Filtering Strategy.
L1.00029: Performance of the Gravity Probe B Cryogenic Sub-System.
L1.00030: The Gravity Probe B Drag-free and Attitude Control. System.
L1.00031: Features of the Gravity Probe B Space Vehicle.
L1.00032: Classical Torques on Gravity Probe B Gyroscopes.
L1.00033: Trapped Flux Mapping for the Gravity Probe B Gyroscopes.



First results – Geodetic Precession



Guide Star
IM Pegasi
HR8703

Frame Dragging
Precession:
39 marc-sec/year in
Equatorial plane

Geodetic
Precession:
6606 marc-
sec/year in
orbital plane

642 kilometers
(~400 miles)

$$\Omega = \frac{3GM}{2c^2R^3}(\boldsymbol{R}\times\boldsymbol{v}) + \frac{GI}{c^2R^3}\left[\frac{3\boldsymbol{R}}{R^2}(\boldsymbol{\omega}\cdot\boldsymbol{R}) - \boldsymbol{\omega}\right]$$

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