



# DGS DYNAMIC GRAVITY METER

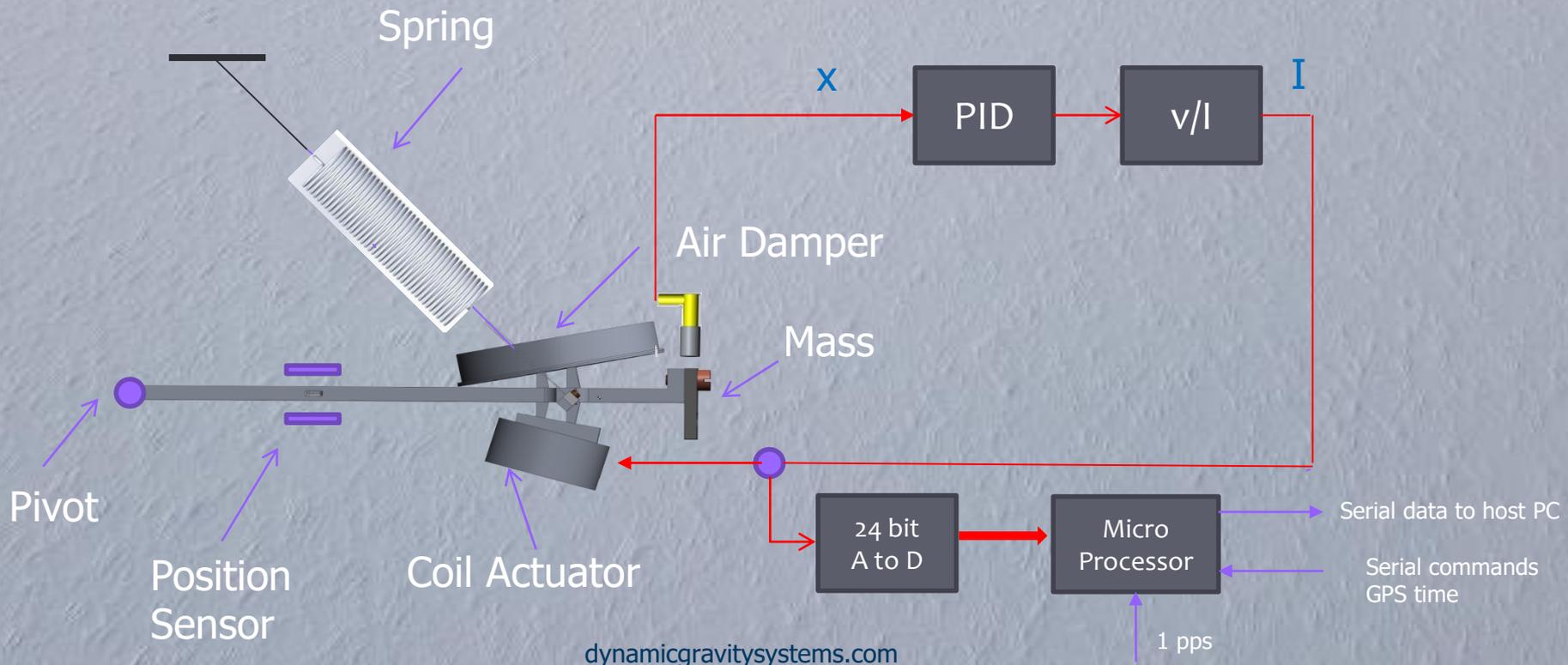
- Low drift Metal Spring with Tungsten mass
- Nulled by capacitive detector and coil actuator
- Air sealed and magnetically shielded sensor
- Sensing element temperature control 0.1 C
- Analog electronics are oven controlled
- Fiber optic gyro stable 2 axis platform
- 3 different selectable platform modes
- High precision time synchronization



# Dynamic Gravity Systems Hardware Design

The sensor -

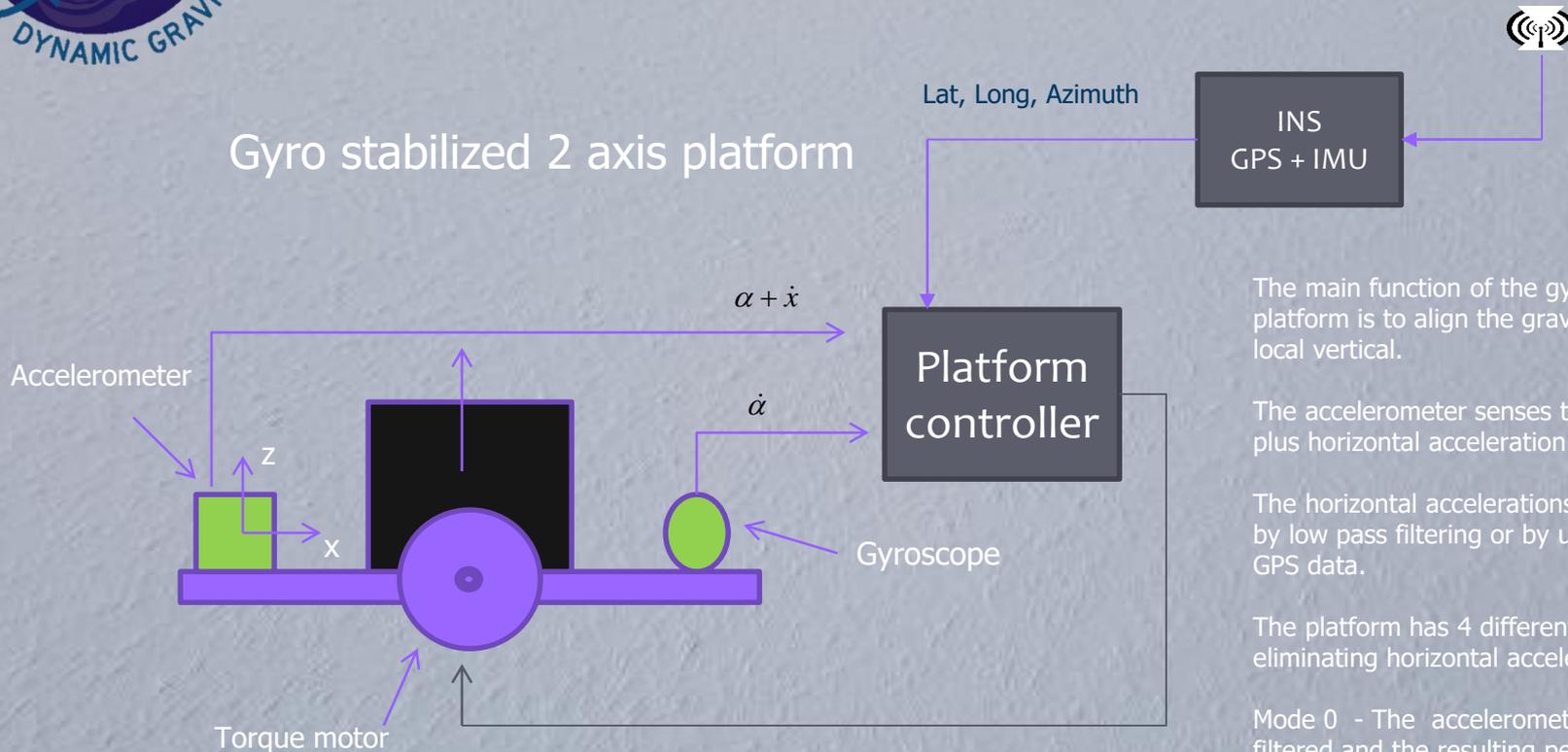
Simple mass spring measurement principle. The specific force on the sensing mass is proportional to the coil current.





# Gyro Stabilised Platform

## Gyro stabilized 2 axis platform



The main function of the gyro stabilized platform is to align the gravity meter to the local vertical.

The accelerometer senses the local vertical plus horizontal acceleration.

The horizontal accelerations must be removed by low pass filtering or by using the real time GPS data.

The platform has 4 different modes of eliminating horizontal accelerations:

Mode 0 - The accelerometer is low pass filtered and the resulting period of the platform is 30 seconds.

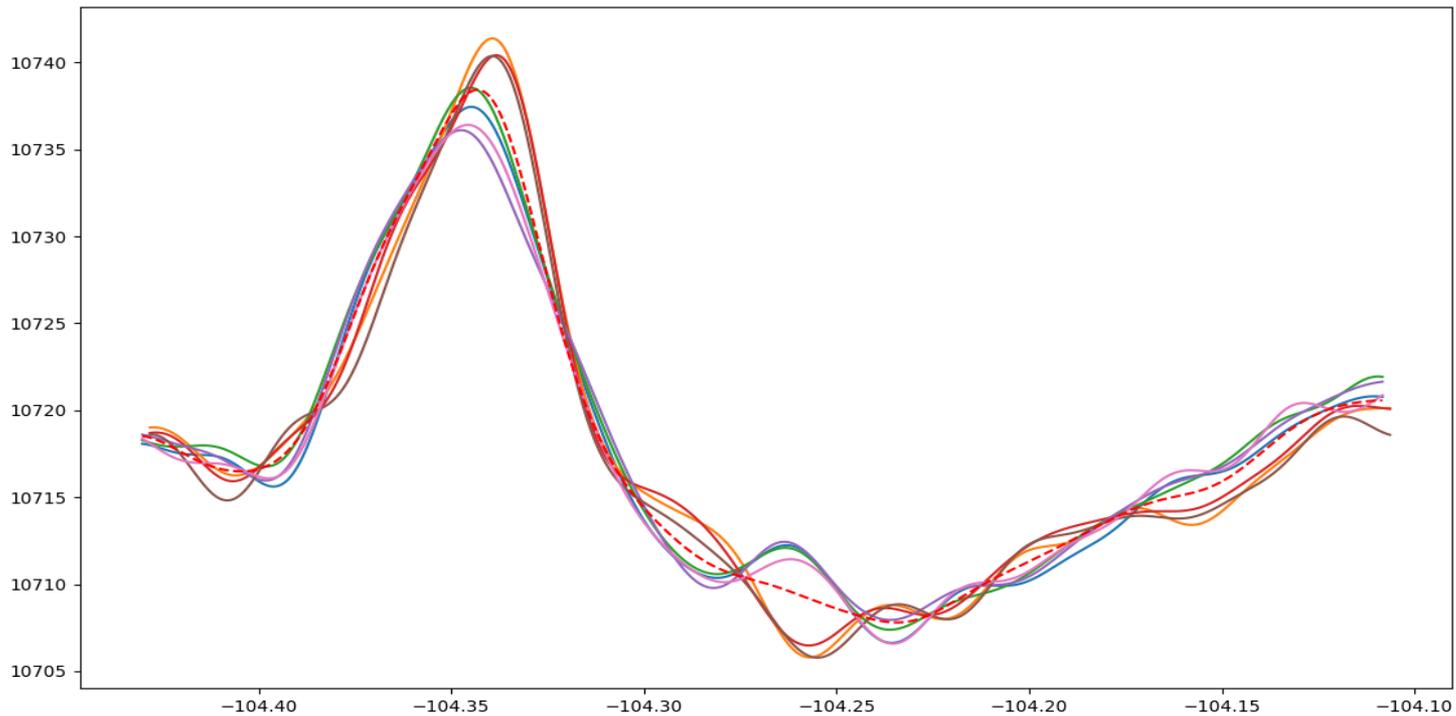
Mode 1 - Same as Mode 1 with 4 min platform period.

Mode 2 - GPS Aided. The external fixes from the GPS are used to eliminate horizontal accelerations from the accelerometer signal. The platform is tuned to 4 min period.

Mode 3 - GPS Aided with an 8 minute period.



# Dynamic Repeatability Test Line AT1A-6



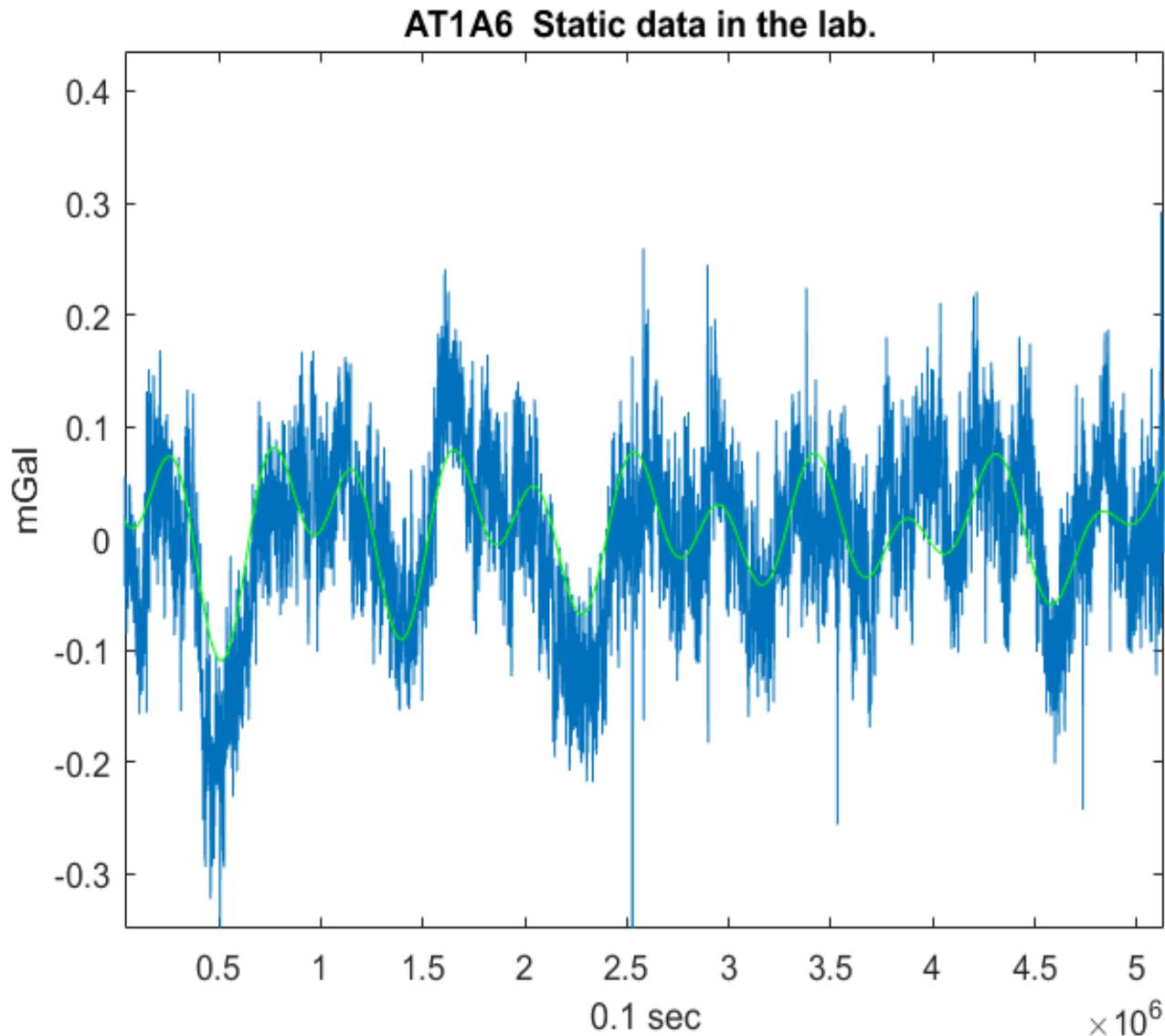
On line gravity repeats with mean error to average < 0.8 mGals with 100 second FIR Blackman exact window.



# AT1A-6 Static Data Showing DC Stability

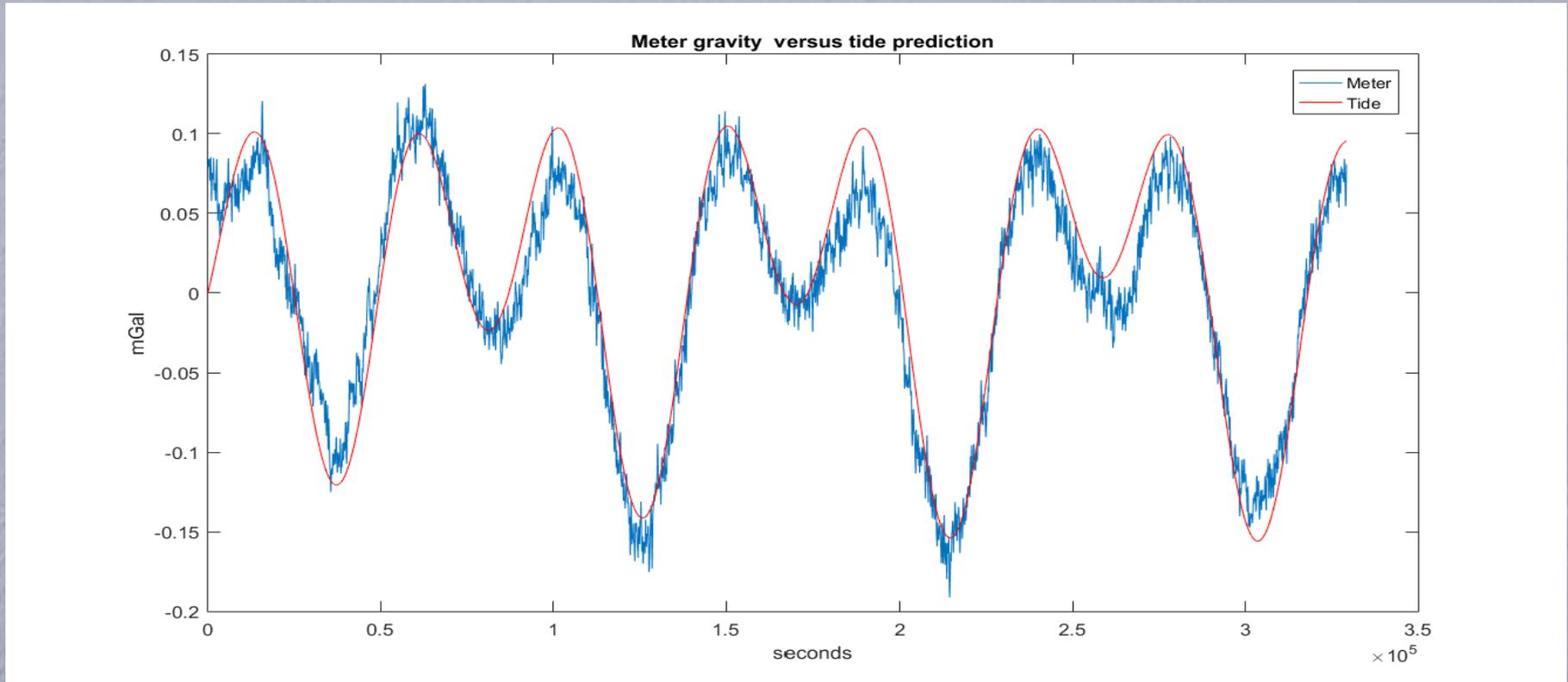
Filter = 120 sec  
Drift less than 4  
microgals/day

Noise  
Std 0.9 mGal @  
120 sec





# The AT1A-10 Sensor and Predicted Tide Showing DC Stability and Low Noise Level



Meter gravity – tide (Sigma=0.020 mGal)

180 second filter, zero mean gravity versus Longman tide prediction