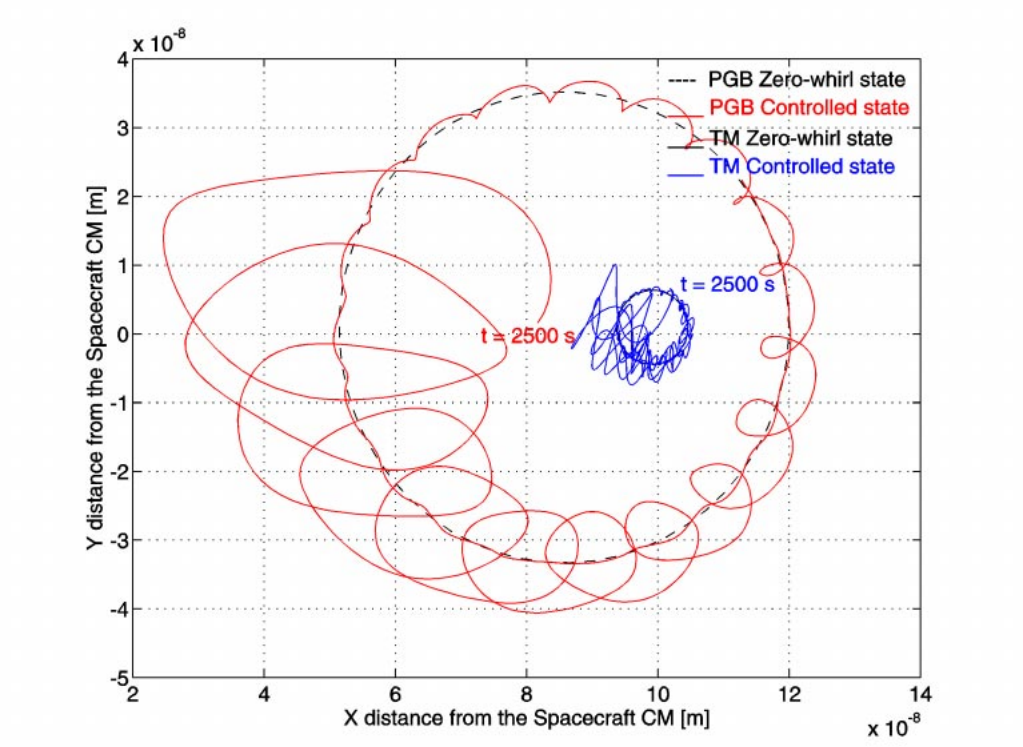
After the Advantages, one Drawback: Slow, Unstable Whirl Motions. They can be Stabilized

Weakly coupled, fast spinning rotors ("supercritical") have been known since 1919 to develop slow unstable whirl motions (at their natural frequencies). But whirl motions haven't killed at all supercritical rotors, because they can be stabilized. We have demonstrated that it can be done also in GG.

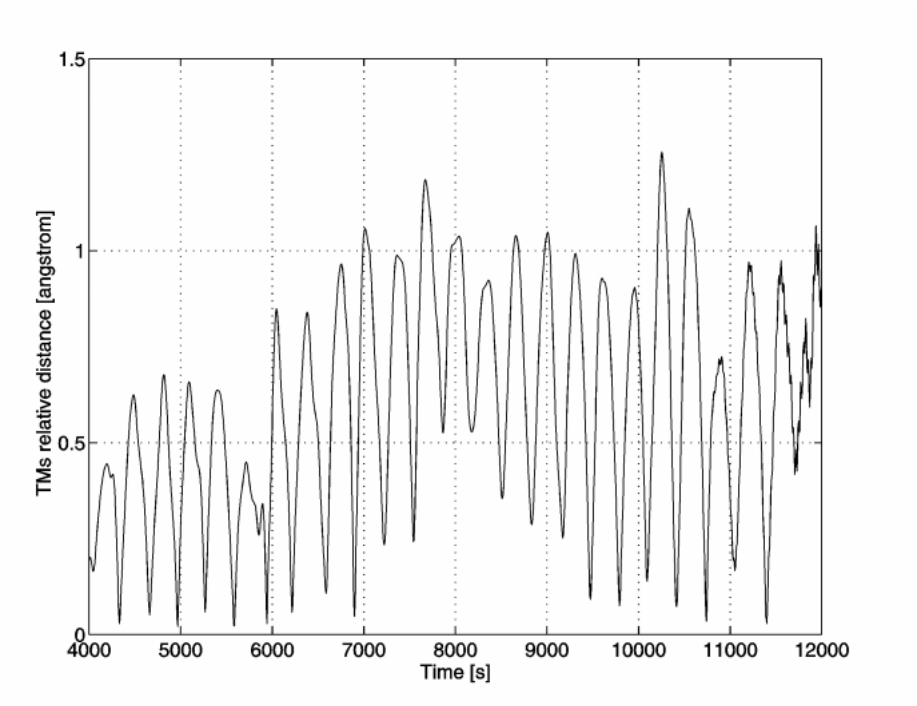


Full system (6 bodies), realistic error sources

Capcitance sensors:
RMS 10^{-6} cm tested
Linear bias 10 μm
Angle bias 1°

Earth sensors:
$\Delta\omega_s/\omega_s = 10^{-4}$ doable

Offset:
ε = 1μm
(10 μm also ok)



Everything as theoretically expected!

Whirl control works as well as shown here also in combination with drag-free control (similar)

Whirl motions grow so slowly that scientific data acquisition is performed while whirl control is off !!!!

Passive damper in GGG only 1/2 gram (test cylinders 10 kg each spinning at 2-10 Hz)