

Concluding Remarks

EP Target Outstanding. And GG can do it

- It can be achieved only in space NASA, ESA and CNES have tried (and still try): NASA since the 70s; ESA since 1989; CNES since 1989
- GG is the only new design (all others are based on STEP, which was based on GP-B technology (Stanford, USA) \Rightarrow not really optimized for EP testing
- High frequency modulation (the higher the better) is by now recognized as crucial to achieve high accuracy

\Rightarrow STEP tries to spin (but can do it only slowly, \cong 1000 sec)

\Rightarrow μ SCOPE (CNES) tries to spin, but has to do it around an off-centered axis and needs to control it actively

In no EP mission high frequency modulation is provided by simple passive spin axis stabilization (for free !)

- All missions except GG have serious Electric discharging problems (remember $F_{el} \cong 10^{40} F_{grav}$)! STEP M3: 130 kg tungsten shield and discharger
- Drag-free control much better with FEED (beyond question ...) but STEP must use He thrusters (a few grams of Caesium vs 300 liters of He....) FEED is the new promising technology, not He thrusters !!!
- GG designed to be the simplest possible: high sensitivity is the goal (more pairs of test masses add nothing) ... GG could be cryogenic much more easily than STEP (centrifugal forces eliminate many problems ...)

Costing Consideration

- GG target in EP testing (1 part in 10^{17}) is the same target of STEP as studied (twice) by ESA at Phase A level (1993 & 1996). Yet STEP M2 and M3 were Medium size missions: ceiling budget 350 MAU !!!!!
- GG is a small. Low cost mission

The Role of ESA

- ESA has officially allocated \leq 20 MAU to participate in a small mission which can perform a high accuracy test of the Equivalence Principle
- Better if this funding remains in Europe: all European space science will benefit

Enormous Impact on the General Public

- GG tests to unprecedented accuracy a physical principle that three fathers of modern science, Galileo Newton and Einstein, regarded as fundamental. Being done in space, with a small satellite which combines high tech, old mechanical principles and extremely precise measurements, GG has all the ingredients to ensure an incredible impact on the public opinion (the taxpayers!), and space science needs it!