Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Lessons Learned from Gravity Probe B for STEP, LISA and other experiments[1] PAUL WORDEN, SAPS BUCHMAN, Stanford University — Demanding experiments such as GP-B require not only scientific expertise from the investigators but also the ability to quickly recognize and adapt to a wide variety of unexpected scientific, technical and programmatic difficulties, from minor discrepancies to design flaws and outright failures. GP-B provides several excellent examples of the process of recovery from these events which are of interest to developing missions. Flexible design and planning are part of the recovery process, but a clear understanding of the programmatic environment is required to have a good chance of success. Specific technical lessons in the areas of materials and fabrication technology, mission architecture and operations, as well as integrated test systems including hardware and software are presented. We also describe examples of GP-B flight anomalies with particular relevance to STEP and LISA that should be avoided in the future, thus enhancing reliability for these missions.

[1]Research supported by NASA under contract NAS8-39225

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Date submitted: 12 Jan 2007 Electronic form version 1.4