Abstract Submitted
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Atomic Gravitational Wave Interferometric Sensors (AGIS) in Space[1] ALEX SUGARBAKER, JASON HOGAN, DAVID JOHNSON, SUSANNAH DICKERSON, TIM KOVACHY, SHENG-WEY CHIOW, MARK KASEVICH, Stanford University — Atom interferometers have the potential to make sensitive gravitational wave detectors, which would reinforce our fundamental understanding of gravity and provide a new means of observing the universe. We focus here on the AGIS-LEO proposal [1]. Gravitational waves can be observed by comparing a pair of atom interferometers separated over an extended baseline. The mission would offer a strain sensitivity that would provide access to a rich scientific region with substantial discovery potential. This band is not currently addressed with the LIGO or LISA instruments. We analyze systematic backgrounds that are relevant to the mission and discuss how they can be mitigated at the required levels. Some of these effects do not appear to have been considered previously in the context of atom interferometry, and we therefore expect that our analysis will be broadly relevant to atom interferometric precision measurements. Many of the techniques relevant to an AGIS mission can be investigated in the Stanford 10-m drop tower.

[1] J.M. Hogan, *et al.*, Gen. Rel. Grav. **43**, 1953-2009 (2011).

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