

Abstract Submitted
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A Conceptual Design for a 4-Satellite Mission to Monitor Variations in The Earth's Gravitational Field PETER L. BENDER, JILA/Univ. of Colorado — The GRACE mission has been monitoring time variations in the Earth's gravitational field with much improved accuracy for the past 5 years. A similar follow-on mission to GRACE may fly soon after GRACE. However, it is of interest to explore what could be done in the future if as many as 4 satellites could be employed and they could be flown in a drag-free mode. Laser interferometry would be used between two pairs of satellites with separations of 50 to 100 km. One pair would be in a polar orbit, and the other in a considerably lower inclination orbit. High laser stability would permit high accuracy measurements of short wavelength gravity variations along orbit. A specific mission design that has been suggested to permit more detailed studies is as follows: 312 km altitude for both pairs; a polar orbit for pair-A, with a 79 rev repeat ground track; and a 62.7 deg. inclination for pair-B, with a 360 rev repeat ground track. Pair-B would have a 22.7 day repeat period, 110 km maximum track spacing at temperate latitudes, and many track crossings even near the equator. Pair-A would have a 5 day repeat period, which would help in monitoring fairly rapid variations in the Earth's field.

Peter L. Bender
JILA/Univ. of Colorado

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