



Perimeter Security and Intruder Detection Using Gravity Gradiometry: A Feasibility Study

By Jared D. Tuinstra

Biblioscholar Okt 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x9 mm. This item is printed on demand - Print on Demand Neuware - Changes in the mass distribution around some point on the Earth's surface induce corresponding changes to the magnitude and direction of the gravity vector at that location. The nine-tensor derivative of the gravity vector, or gravity gradient, is sensitive to very small changes in the gravity vector. With some assumptions, continuous measurement of the gravity gradient using a gravity gradiometer (GGI) can be used to determine the location of a mass change in the local area near the instrument. This investigation sought to determine the effectiveness, operating characteristics, and limitations of a physical perimeter security system that uses an array of GGIs to detect and locate a human intruder. Results were obtained via computer simulations that utilized the closed form solution for calculating a gravity gradient given an object's size and mass, as well as industry-predicted future GGI performance characteristics. 144 pp. Englisch.

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