



Using GPS as a Reference System to Hit a Moving Target

By Air Force Institute of Technology (U. S.). Graduate School of Engineering and Management

Biblioscholar Sep 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x8 mm. This item is printed on demand - Print on Demand Neuware - The Affordable Moving Surface Target Engagement (AMSTE) project attempts to develop affordable solutions to the precise moving target surface target engagement problem. Up to this point, most of the error analysis performed for the AMSTE project has been at the error variance level, generating root-sum-square (RSS) total errors from error budgets consisting of constant error variances. In reality, the level of error for both Global Positioning System (GPS) positioning and radar targeting systems is highly dependent upon the given situation (such as the distance between sensor and target, the altitude differences, etc.) This research generates a more comprehensive model of the GPS errors based upon the underlying physics of the situation. It focuses on differential tropospheric errors and multipath, as these are the primary error source in a differential GPS targeting system. In addition to the error model development, a code-based differential GPS and differential ranging approach is implemented in simulation using a Kalman filter. This approach uses GPS measurements collected by each of the sensors and the weapon, and it uses ranging measurements from the sensors to...



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