



An Examination of Range and Doppler Mismatch and Their Effects on Radar Modeling

By Gregory L. Izdepski

Biblioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x6 mm. This item is printed on demand - Print on Demand Neuware - A commonly accepted airborne phased array radar model simplifies the analytical derivation by assuming a waveform is perfectly matched in range and Doppler shift. This assumption means the matched lter output is effectively constant for all possible received scatterer Doppler and range mismatches, greatly simplifying the analytical development from that point forward. This research removes the matched Doppler and range assumption and examines the effects of several common waveforms on the model's delity along with the associated impact on radar performance, both non-adaptive and adaptive. Analysis is completed using power spectral density comparisons and the fully adaptive output signal to interference plus noise ratio comparison. Results indicate that the model's delity is impacted little by the Time Frequency Auto Correlation Function. However, change in bandwidth from the compressed waveforms does impact the model. Increased bandwidth introduces more thermal noise which dominates clutter returns. Therefore, the clutter problem becomes less di cult. The trade-o is a reduction in the resolution capability of the clutter spectrum. 106 pp. Englisch.



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