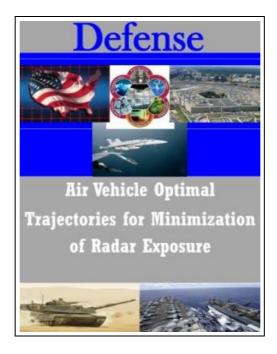
# Air Vehicle Optimal Trajectories for Minimization of Radar Exposure (Defense)



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# Reviews

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(Kaelyn Reichel)

# AIR VEHICLE OPTIMAL TRAJECTORIES FOR MINIMIZATION OF RADAR EXPOSURE (DEFENSE)



CreateSpace Independent Publishing Platform. Paperback. Condition: New. This item is printed on demand. 106 pages. Dimensions: 11.0in. x 8.5in. x 0.2in.This book addresses the problem of formulating and analyzing the single vehicle path planning problem for radar exposure minimization. A single vehicle with given initial and final positions is exposed to a threat radar and optimal paths are sought. The calculus of variations and optimal control are applied to formulate optimal trajectories and numerical optimization algorithms are utilized to solve for the optimal paths. A sensitivity study of the objective cost is performed for flight against one radar utilizing two different geometries and several numerical approaches. A second threat radar is then included in the formulation and the optimal trajectory for flight between the radars is found for several symmetric threat radar geometries. The objective cost of the optimal paths are compared with the direct path (a straight line) as well as trajectories generated using the graphical Voronoi path planning approach. Finally, each radar is given a different weight, simulating differing transmission powers, and optimal paths are sought for the same radar configurations. The objective costs of these trajectories are again compared to the direct path and the weighted Voronoi path. Results indicate low sensitivity of the objective cost to suboptimal paths for flight against one threat radar; however, the numerical method applied to find the solution results in widely varying optimal trajectories. The nonlinear differential equations governing the optimal trajectory against multiple radars constitute a difficult, numerically sensitive two point boundary value problem. Results indicate that approaching the Voronoi-generated curves in an optimal way from the endpoints may provide for feasible on-line and real-time utilization. This item ships from La Vergne, TN. Paperback.



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