Trajectory shaping of surface-to-surface missile with terminal mpact angle constraint

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Abstrak

This paper presents trajectory shaping of a surface-to-surface missile attacking a fixed with terminal impact angle
constraint. The missile must hit the target from above, subject to the missile dynamics and path constraints. The
problem is reinterpreted using optimal control theory resulting in the formulation of minimum integrated altitude. The
formulation entails nonlinear, two-dimensional missile flight dynamics, boundary conditions and path constraints. The
generic shape of optimal trajectory is: level flight, climbing, diving; this combination of the three flight phases is called
the bunt manoeuvre. The numerical solution of optimal control problem is solved by a direct collocation method. The
computational results is used to reveal the structure of optimal solution which is composed of several arcs, each of
which can be identified by the corresponding manoeuvre executed and constraints active.