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Survivability of Maneuvering Aircraft against Air to Air Infrared Missile

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Abstract : An air to air infrared missile poses a significant threat to the survivability of an aircraft due to an advanced sensitivity of sensor and maneuverability of the missile. Therefore, recent military aircraft is equipped with MAW (Missile Approach Warning) to take an evasive maneuver and to deploy countermeasures like chaff and flare. In this research, an effect of MAW sensitivity and resulting evasive maneuver on the survivability of the fighter aircraft is studied. A single engine fighter jet with Mach 0.9 flying at an altitude of 5 km is modeled in the research and infrared signature of the aircraft is calculated by numerical simulation. The survivability is assessed in terms of lethal range. The MAW sensitivity and maneuverability of an aircraft is used as variables. The result showed that improvement in survivability mainly achieved when the missile approach from the side of the aircraft. And maximum 30% increase in survivability of the aircraft is achieved when existence of the missile is noticed at 7 km distance. As a conclusion, sensitivity of the MAW seems to be more important factor than the maneuverability of the aircraft in terms of the survivability.

Keywords : air to air missile, missile approach warning, lethal range, survivability
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