# The Modeling and Effectiveness Evaluation for Vessel Evasion to Acoustic Homing Torpedo

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**Abstract :** This paper aims for studying the operational efficiency of surface warship's motorized evasion to acoustic homing torpedo. It orderly developed trajectory model, self-guide detection model, vessel evasion model, as well as anti-torpedo error model in three-dimensional space to make up for the deficiency of precious researches analyzing two-dimensionally confrontational models. Then, making use of the Monte Carlo method, it carried out the simulation for the confrontation process of evasion in the environment of MATLAB. At last, it quantitatively analyzed the main factors which determine vessel's survival probability. The results show that evasion relative bearing and speed will affect vessel's survival probability significantly. Thus, choosing appropriate evasion relative bearing and speed according to alarming range and alarming relative bearing for torpedo, improving alarming range and positioning accuracy and reducing the response time against torpedo will improve the vessel's survival probability significantly.