

<<导弹制导原理>>

图书基本信息

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作者：江加和

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内容概要

The intent of this book is to present guidance and control principle of tactical missiles. It includes basic concepts of guided missile, fundamental concepts of vehicle dynamics, dynamical equation and kinematic equation of vehicle, longitudinal state equation and transfer function, lateral state equation and transfer function, fundamental principle of missile guidance and control system, guidance laws, autopilot design, command guidance systems, homing guidance systems, and guidance and control system hardware-in-the-loop simulation. This book is suitable for international postgraduate and advanced undergraduates majoring in navigation, guidance and control, and also suitable for engineering and technical personnel engaged in the design and development of guided missiles.

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书籍目录

- CHAPTER 1 Introduction to Missile Guidance
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- CHAPTER 11 Hardware-in-the-loop Simulation of Guidance and Control System

章节摘录

版权页：插图： When a vehicle flies in the air, it undergoes resistance which the air exerts. In order to overcome the resistance, it is necessary to consume engine power. Not only the vehicle wings produce resistance, but also any other part exposing to the air yields resistance. So the wing resistance can not represent the total resistance. As for a low speed vehicle, there are the friction resistance, the pressure deference resistance, and the induced resistance. For a supersonic vehicle, the shock wave results in the wave resistance. Anyway, the coefficient of drag consists of two terms as follows: $C_D = C_{D0} + C_{Di}$ (2.4-13) where C_{D0} = zero lift drag coefficient, C_{Di} = lift induced drag coefficient. In the case of a small angle of attack, the drag coefficient is represented as $C_D = C_{D0}(Ma) + K(Ma)C_L^2$ (2.4-14) Moreover, the drag coefficient depends on Mach number. Figure 2.4-5 shows the C_{D0} versus Mach number Ma curve in the case of $\alpha = 0$. Figure 2.4-6 shows the C_L versus C_D curve, called lift-drag polar curve. It indicates that a vehicle gets lift at the cost of producing resistance.

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