

基于自抗扰控制的制导与运动控制一体化设计

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摘要 针对机动目标的拦截问题,将自抗扰控制的思想用于制导与运动控制一体化设计.其中,基于自抗扰控制的制导律产生在目标机动的情况下使视线角速度快速趋于零所需的制导律;而基于自抗扰控制的运动控制律可以在非线性不确定动态情况下实现所需加速度,从而保证快速有效地完成拦截任务.进一步分析所设计方案对制导与运动控制一体化设计的适用性,并通过计算机仿真验证该方案的有效性.

关键词 [机动目标的制导律](#),[非线性不确定运动的控制](#),[制导与控制一体化设计](#),[自抗扰控制](#).

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ADRC Based Integrated Guidance and Control Scheme

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Abstract Based on the active disturbance rejection control (ADRC), an integrated guidance and control scheme is developed for the pursuit of maneuvering targets. The ADRC based guidance law takes into account the nonlinearities and uncertainties involved both in the target kinematics and pursuer dynamics such that it can produce the guidance law which can zero the line-of-sight (LOS) rate even when the target is maneuvering. The ADRC based control law takes into account the nonlinearities and uncertainties existing in the motion dynamics such that the acceleration needed can be achieved. Furthermore, the capability of the proposed scheme is analyzed and the feasibility is tested by some simulations.

Key words [Guidance law for maneuvering targets](#), [control design for nonlinear uncertain systems](#), [integrated guidance and control](#), [the active disturbance rejection control\(ADRC\)](#).

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