无人机航道全局优化调度数学模型仿真分析

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摘　要：无人机航道全局优化调度模型是一组多元耦合的系统模型，针对当前的非线性时滞泛函调度模型容易陷入局部收敛的问题，提出一种基于双曲偏微分方程波动组合优化的无人机航道全局优化调度数学模型.采用非线性 Levenberg-Marquardt 双曲偏微分方程构建无人机航道的参量输入输出控制模型，通过三次非线性特征测度分解进行航道调度的全局寻优，由 Lipschitz 凸条件得到偏微分方程的奇异半正定周期解，根据解向量作为约束参量进行航道调度的稳定性泛函，进行航道调度模型的全局波动组合优化.仿真结果表明，采用该数学模型进行无人机航道调度的收敛性较好，调度时滞误差较低，可靠性和稳健性较优.

关键词：无人机；航道；调度；全局优化；数学模型

Simulation Analysis of the Mathematical Model for the Global Optimal Dispatching of Unmanned Aerial Vehicles

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Abstract：The UAV navigation global optimization scheduling model is a set of multivariate coupling system model, aiming at the nonlinear delay functional scheduling model the prematurity problem, put forward a kind of hyperbolic partial differential equations of wave motion optimization of UAV channel scheduling mathematical model based on global optimization. By using Levenberg-Marquardt nonlinear hyperbolic partial differential equations to construct parameter input and output control model of UAV navigation, global three times through the nonlinear characteristics of waterway measure decomposition scheduling optimization, partial differential equations singular semi positive periodic solutions obtained by Lipschitz convex conditions, according to the solution vector as the constraint parameter stability of functional channel scheduling, global optimization the fluctuation of channel scheduling model. The simulation results show that the proposed model has better convergence performance, and the error is less, and the reliability and robustness are better.

Key words：unmanned aerial vehicle (UAV); channel; scheduling; global optimization; mathematical model

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