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含有V型垂尾飞机的舵面配置

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Effector Deployment for the Airplane with V Shape Vertical Tail

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摘要 现代飞机为满足先进控制技术实现和满足一定的可靠性和机动性,要求安装较多的控制舵面,为了使飞机安装舵面之间产生的操纵效能达到最佳,需要对舵面的位置、附体安装角等因素进行配置。借用飞机重构控制方法,采用Moore Penrose逆法,对飞机的操纵效能提出了一套直接控制冗余算法,使操纵舵面之间达到最佳配置。结合国内某型号飞机含有V型垂尾在配平时的数据验证算法正确性。

关键词： 舵面配置 控制效能 Moore-Penrose逆法 直接控制冗余 V型垂尾

Abstract： For modern airplanes, it is usually needed to install more control effectors to realize the application of advanced technique and to satisfy the requirements of reliability and maneuverability. For optimal purpose of the efficiencies of the installed effectors in combination, it is needed to deploy the factors such as the installation location and installation angle. In this paper, by using Moore-Penrose inversion method borrowed from aircraft reconfigurable control method, a set of direct control redundance methods is brought up and the optimal control efficiencies of different effector deployments core obtained. The feasibility of the method proposed is verified by the aerodynamic data of a certain type of native airplane with V-shape vertical tail in flight balance state.

Keywords： effectors deployment control efficiency Moore-Penrose inverse direct control redundance V-shape vertical tail

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