



航空学报 » 2004, Vol. 25 » Issue (2) :97-103 DOI:

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飞行员抗荷系统动态特性数学模型

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The Dynamic Model of Pilot Anti-G System

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摘要

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摘要 研究建立了飞行员抗荷系统动态模型,包括过载—眼动脉血压子模型、人体正加压呼吸子模型、抗荷阀—抗荷服子模型、面罩子模型、后倾座椅子模型、抗荷动作子模型、抗荷服压力—主动脉输出压子模型等部分。该模型可计算不同过载谱、不同抗荷装备条件下的飞行员过载耐限和耐受时间。研究表明,在GOR、ROR、SACM等不同过载谱条件下人体过载耐限值的计算结果与实验数据符合良好。

关键词: 抗荷系统 动态模型 系统辨识

Abstract: An integrated dynamic model of pilot anti-G system is developed, which is composed of G-ELBP sub-model, human PBG suc-model, AGV-AGS sub-model, mask sub-model, Tilt-back seat sub-model, AGSM sub-model and AGS pressure-aortic outlet pressure sub-model. It can be used to investigate G-Tolerance and duration time in different kinds of acceleration profiles and anti-G equipments. In different G-profiles (such as GOR, ROR and SACM), the agreement between model prediction and experimental data is satisfactory.

Keywords: anti-G system dynamic model system identification

Received 2003-01-25; published 2004-04-25

引用本文:

蒋凡;杨春信. 飞行员抗荷系统动态特性数学模型[J]. 航空学报, 2004, 25(2): 97-103.

JIANG Fan;YANG Chun-xin. The Dynamic Model of Pilot Anti-G System[J]. Acta Aeronautica et Astronautica Sinica, 2004, 25(2): 97-103.

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