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驾驶员建模精度分析方法的改进及应用

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DEVELOPMENT OF A METHOD AND APPLICATION FOR IMPROVING THE PILOT MODELING ACCURACY

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摘要

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**摘要** 研究了驾驶员建模精度分析方法和提高建模精度的途径。基于驾驶员在环实时仿真结果, 识别驾驶员描述函数, 按加权最小二乘准则采用复形调优算法识别模型参数。结合两步识别过程, 针对现有模型精度公式在最终模型检验上的缺陷, 进一步完善了精度评价公式。根据公式提出了基于灵敏度分析的驾驶员模型参数调整方法。应用结果表明: 所建立的公式和方法对提高驾驶员模型建模精度效果明显。

**关键词:** 驾驶员模型 人机系统 建模精度 飞行仿真

**Abstract:** This study attempts to develop pilot modeling accuracy formulae and a method to improve the accuracy of pilot model identified from the real time simulation experiments. The developed formula in this paper is on the basis of the formulae proposed in reference. The major advantage of developed formula is that it can incorporate the combined effects of the two stages of the pilot model identifications: identification of the pilot description function from the real time simulation experiments and the parameter identification of the pilot model from the pilot description in the frequency domain. The advantage of the formula offers a basis on which the method to improve the pilot modeling accuracy is built according to sensitivity analysis for the pilot model parameter in the frequency domain. Practical application verifies the validity of the method.

**Keywords:** pilot model man-machine system modeling accuracy flight simulation

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