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## 确定颤振模型设计参数的方法研究

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## Research on Methods Used to Determine Flutter Model Design Factors

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摘要

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### 摘要

在飞机颤振模型设计和试验工作中,往往因设计参数不合理导致试验受影响或设计进度被拖延,而国内外关于颤振模型设计参数选取方面公开的资料很少。本文研究了颤振风洞试验模型设计的基本比例尺和其他设计因素(包括超重比、主梁截面形状、当量质量比等)的关系,提出了飞机基准模型梁架的当量质量比概念和截面尺度比概念,为颤振风洞试验模型设计比例尺和其他设计因素的评估带来了很大便利。将本文方法应用于某飞机颤振风洞试验模型的设计中,在设计之初解决了许多后续潜在的问题,某颤振风洞试验模型设计加工周期也从预定的6个月降低到3个月,提高了研制效率。

关键词: 颤振模型 当量质量比 截面尺度比 超重比 截面形状系数

### Abstract:

Aircraft flutter test model design and actual testing are often delayed because of inaccurate model design parameters, and there are few research publications in this field. This paper studied the basic design scales and other factors such as overweight ratio, section shape, equivalent mass ratio, etc., for flutter test model design. Meanwhile, it discussed the equivalent mass ratio and the section dimensional ratio of the aircraft basic spar frame model. They are convenient concepts to evaluate the basic design scales and other factors for designing flutter test models. As an example, reasonable design scales and factors are provided by the proposed method for an aircraft component flutter model design, which thus succeeds in solving potential problems in the primary stage and shortens the design and manufacture period of the test model from 6 to 3 months.

Keywords: flutter model equivalent mass ratio section dimensional scale overweight ratio section shape factor

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