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## 确定壳体结构外压临界载荷的非破坏实验方法

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## NONDESTRUCTIVE EXPERIMENTAL METHOD FOR DETERMINING CRITICAL LOADS OF SHELL STRUCTURES UNDER EXTERNAL PRESSURE

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摘要

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**摘要** 本文给出了一种确定壳体结构外压临界载荷的非破坏实验方法,这是一种以壳体结构的法向挠度作为控制变量的逐步逼近法。运用这种方法,对九件由LY12-CZ铝合金制成的具有周向 $\Omega$ -型筋条的柱形曲板和某飞机机身的3号至6号油箱内壁作了非破坏屈曲试验,准确地确定了壳体的临界压力,初步研究了周向约束对加筋柱形曲板屈曲的影响。试验结果表明,这种非破坏屈曲试验方法是成功的。

**关键词:**

**Abstract:** A nondestructive experimental method is provided for determining critical loads of shell structures under external pressure. It is a step-by-step method using normal deflection of shell structures as control variation. The nondestructive buckling tests on 9 cylindrical panels made of LY12-CZ aluminum alloy with circumferential  $\Omega$ -stiffeners and internal panels of 3rd to 6th oil boxes in an airplane fuselage were completed with the presented method. The critical pressures of shells were exactly determined. A preliminary investigation on influence of the circumferential restraint on the buckling loads of stiffened cylindrical panels has been carried out. The test results show that the nondestructive buckling experimental method is a success.

**Keywords:**

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