



### 斜卷边冷弯薄壁槽钢轴压柱弹性畸变屈曲计算

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### CALCULATION OF THE ELASTIC DISTORTIONAL BUCKLING FOR COLD-FORMED THIN-WALLED CHANNEL COLUMNS WITH INCLINED SIMPLE EDGE STIFFENERS UNDER AXIAL PRESSURE

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**摘要** 畸变屈曲是冷弯薄壁卷边槽钢的一种重要屈曲模式,弹性畸变屈曲临界应力是目前一些主要规范计算畸变屈曲的关键。该文首先推导出畸变屈曲模式下,构件纵向翘曲位移的显式计算公式,从而简化计算过程;然后基于经典的薄板理论,计算平面内位移,确定构件平面内的变形,在现有研究基础上得到斜卷边冷弯薄壁槽钢轴压柱弹性畸变屈曲计算公式;最后与有限条法、近似模型算法进行对比,验证了该文计算方法的正确和有效性。该文中的弹性畸变屈曲计算公式简单,便于手算,可供工程设计人员参考。

**关键词:** 冷弯薄壁型钢 斜卷边槽钢 弹性畸变屈曲 轴压柱 翘曲 分析计算式

**Abstract:** The Distortional buckling is an important buckling mode governing the stability design of cold-formed lipped channel columns. The elastic distortional critical stress is the key point for the distortional buckling calculation according to current main design codes and specifications. The explicit formulae for the longitudinal warping displacement calculation of members in a distortional buckling mode are derived. And the calculation course is simplified. Based on the classical plate theory, the formulae of in-plane displacements are deduced. And the plane deformation of a cross-section is thusly determined. On the base of the existing research results, the formulae of the elastic distortional buckling for cold-formed thin-walled channel columns with inclined simple edge stiffeners under axial pressure are presented. The presented formulae predict good results, compared with the finite strip method and approximation model method. The results demonstrate the validity and efficiency of the method presented in this paper. Being simply and usable, it is a manual method which can give reference to the research and design.

**Key words:** cold-formed thin-walled steel channels with inclined simple edge stiffeners elastic distortional buckling columns under axial pressure warping analytical formulae

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