

## On the Evaluation of Critical Lateral-Torsional Buckling Loads of Monosymmetric Beam-Columns

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**Abstract :** Beam-column elements are defined as structural members subjected to a combination of axial and bending forces. Lateral torsional buckling is one of the major failure modes in which beam-columns that are bent about its strong axis may buckle out of the plane by deflecting laterally and twisting. This study presents a compact closed-form equation that it can be used for calculating critical lateral torsional-buckling load of beam-columns with monosymmetric sections in the presence of a known axial load. Lateral-torsional buckling behavior of beam-columns subjected to constant axial force and various transverse load cases are investigated by using Ritz method in order to establish proposed equation. Lateral-torsional buckling loads calculated by presented formula are compared to finite element model results. ABAQUS software is utilized to generate finite element models of beam-columns. It is found out that lateral-torsional buckling load of beam-columns with monosymmetric sections can be determined by proposed equation and can be safely used in design.

**Keywords :** lateral-torsional buckling, stability, beam-column, monosymmetric section

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