Analysis of moderately thin-walled beam cross-sections by cubic isoparametric elements -
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In technical beam theory the six equilibrium states associated with homogeneous tension, bending, shear and torsion are
treated as individual load cases. This enables the formulation of weak form equations governing the warping from shear
and torsion. These weak form equations are solved numerically by introducing a cubic-linear two-dimensional
isoparametric element. The cubic interpolation of this element accurately represents quadratic shear stress variations
along cross-section walls, and thus moderately thin-walled cross-sections are effectively discretized by these elements.
The ability of this element to represent curved geometries, and to accurately determine cross-section parameters and
shear stress distributions is demonstrated.

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