

Abstract Submitted
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Buckling of a holey column DRAGA PIHLER-PUZOVIC , ANDREW HAZEL , University of Manchester, TOM MULLIN , University of Oxford — We report the results from a combined experimental and numerical investigation of buckling in a novel variant of an elastic column under axial load. We find that including a regular line of centred holes in the column can prevent conventional, global, lateral buckling. Instead, the local microstructure introduced by the holes allows the column to buckle in an entirely different, internal, mode in which the holes are compressed in alternate directions, but the column maintains the lateral reflection symmetry about its centreline. The internal buckling mode can be accommodated within a smaller external space than the global one; and it is the preferred buckling mode over an intermediate range of column lengths for sufficiently large holes. For very short or sufficiently long columns a modification of the classical, global, lateral buckling is dominant.

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