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Tensile behavior of an auxetic structure: analytical modelling and finite element analysis

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Highlights

- The post-yield tensile behavior of honeycombs with negative Poisson's ratio was firstly reported.
- Analytical modelling is performed by considering the plastic, nonlinear behavior of cell walls.
- Two material models have been studied, a rigid-perfectly plastic material model and that with strain hardening.
- Plastic Poisson's ratio has been obtained analytically by studying the ratio of strain increments in the two principal directions.

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