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A new two-dimensional elastic metamaterial system with multiple local resonances

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Highlights

- A new two-dimensional elastic metamaterial system is proposed.
- The design of the representative cell of the material is based on multiple local translational resonance.
- The elastic metamaterial shows simultaneous negative mass, negative bulk modulus and negative shear modulus.
- It can behave either as a solid-like system with negative phase velocities for longitudinal and transverse waves, or a fluid-like system mainly supporting longitudinal waves.

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