

# Significance & Novelty

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The GPR model of continuum mechanics has been purported to represent an alternative formulation to describe both fluids and solids within the same hyperbolic system of differential equations. There are many potential benefits to this, as detailed in the paper. This paper presents a method for modeling non-Newtonian fluids (dilatants and pseudoplastics) by a power law under the GPR model, along with a new numerical scheme for solving this system. The scheme is also modified to solve the corresponding system for power-law elastoplastic solids. This broadens significantly the range of problems that the GPR model can be applied to, from both a theoretical and a practical perspective.