

## A POSSIBLE NEW TREND IN MODELLING PLASTIC BEHAVIOUR OF MATERIALS

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**Abstract:** Contemporary material models in plasticity use a plastic flow rule that meets the conditions of objectivity but does not meet the conditions of compatibility. The latter then causes the change in the physics of the body's plastic deformations, during which the body moves from its initial configuration to its intermediate configuration without a plastic displacement field. The incompatibility of the plastic deformation gradient is a severe problem that affects the whole theory of plasticity, but particularly the theory of multiplicative plasticity [1, 2]. Since the problem is mathematical rather than physical, it can be solved. In this paper, we critically analyse whether using a different plastic flow rule can solve the problem and, if not, what could be the new trend in modelling the plastic behaviour of materials.

**Keywords:** plasticity, plastic flow rule, compatibility, objectivity, FEM.

### References

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