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**Mesoscopic modelling of masonry using weak and strong discontinuities.** (English)

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Summary: A mesoscopic masonry model is presented in which joints are modelled by weak and strong discontinuities through the partition of unity property of finite element shape functions. A Drucker-Prager damage model describes joint degradation whereas the bricks remain linear elastic throughout the simulations. Analogies and differences amongst strong and weak discontinuity models are discussed, with special emphasis on kinematic description and implementation. Mesh sensitivity and performance of the presented models are illustrated by two-brick, three-point bending and shear wall tests.

**MSC:**

74P15 Topological methods for optimization problems in solid mechanics

74P10 Optimization of other properties in solid mechanics

74A45 Theories of fracture and damage

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**Keywords:**

masonry; mesoscopic model; weak discontinuities; partition of unity; GFEM; damage

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