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MODELLING OF HETEROGENEOUS MEDIA – MULTI-SCALE APPROACHES AND INELASTIC BEHAVIOUR

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ABSTRACT

Models of heterogeneous media are a formidable challenge in various aspects: the inhomogeneity may be at scales which are too close to the macro-scale where the final computation is to be performed, thus making homogenisation approaches doubtful especially when localised failure phenomena have to be taken into account. On the other hand the scale of heterogeneities is typically too small to allow for a full resolution at the macro-scale. The minisymposium will be devoted especially to the multi-scale aspects of modelling heterogeneouos media, including but not limited to

- probabilistic description of heterogeneous media, porous media, and media with inclusions or fibres

- computational generation of models of heterogeneous media from probabilistic descriptions and/or, for example, morphing of CT-scans

- modelling and multi-scale computations of elastic/reversible behaviour

- modelling and multi-scale computations of inelastic/irreversible behaviour, including ductile, quasi-brittle and brittle behaviour

- modelling and multi-scale computations of flow through porous heterogeneous media, including interactions with elastic/inelastic behaviour (e.g. fracking)