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Computational Homogenisation of Microheterogeneous Materials Including Decohesion at Finite Strains

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In this paper we present some aspects of computational homogenisation procedures of microheterogeneous materials which can show decohesion in a cohesive zone around the particles. Applications to this are e.g. polymer coatings stiffened with sand. Due to the decohesion we get finite deformations and finite strains within the RVE. The geometrical and material nonlinearities cause the main difficulties. The homogenisation procedure leads to an effective stress strain curve for the RVE. Here we set a special focus on the adaptive numerical model, the statistical testing procedure and the different boundary conditions (pure traction, pure displacement and natural boundary conditions) applied on the RVE.

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