Numerical Upscaling for Multiscale Flow Problems

By Jörg Willems

Südwestdeutscher Verlag Für Hochschulschriften AG Co. KG Sep 2015, 2015. Taschenbuch. Book Condition: Neu. 220x150x9 mm. This item is printed on demand - Print on Demand Neuware - The monograph at hand deals with the numerical solution of multiscale problems arising in the modeling of processes in fluid and thermo dynamics. Many of these processes, governed by partial differential equations, are relevant in engineering, geoscience, and environmental studies. More precisely, this monograph discusses the efficient numerical computation of effective macroscopic thermal conductivity tensors of high-contrast composite materials. The term 'high-contrast' refers to large variations in the conductivities of the constituents of the composite. Additionally, this monograph deals with the numerical solution of Brinkman's equations. This system of equations adequately models viscous flows in (highly) permeable media. It was introduced by Brinkman in 1947 to reduce the deviations between the measurements for flows in such media and the predictions according to Darcy's model. 148 pp. Deutsch.

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