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On a multiple crack order parameter phase-field model accounting for mechanical jump conditions

Twenty-third international conference on composite materials

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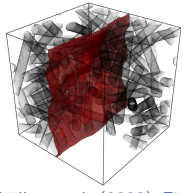
Motivation and recently addressed topics

Motivation

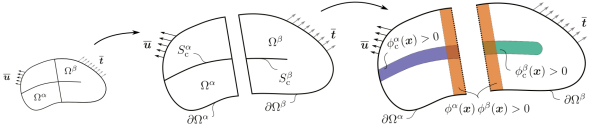
- Materials with complex morphologies and high contrast in material parameters
- Few phasefield models for crack propagation is heterogeneous systems exist



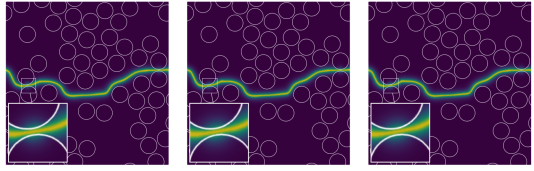
Schöller et al. (2022) Fig.13

Recently addressed topics

- Multiple crack order parameters (MCOP) multphase-field model introduced in Schöller et al. (2022)
- Extension of MCOP model to account for mechanical jump conditions in Schöller et al. (2023)



Schöller et al. (2023) Fig.1



Schöller et al. (2023) Fig.3

Acknowledgement and recent publications

Acknowledgement

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Recent publications

Prahs, Reder, Schneider, Nestler, Int. J. Mech. Sci. (2023), currently in production

Schöller, Schneider, Prahs, Nestler, PAMM 22 (2022), 1-6

Schöller, Schneider, Herrmann, Prahs, Nestler, Comput. Methods Appl. Mech. Eng., 2022, 395, 114965, 1-24

Prahs, Böhlke, Mech. Res. Commun., 2022, 119, 103832, 1-6

Prahs, Böhlke, Continuum Mech. Thermodyn., 2019, 32, 843-859

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Bayerschen, Prahs, Wulfinghoff, Ziemann, Gruber, Walter, Böhlke, 2016. J. Mater. Sci. 51, 7451-7470

References I

Schöller, L., Schneider, D., Herrmann, C., Prahs, A., Nestler, B., 2022. Phase-field modeling of crack propagation in heterogeneous materials with multiple crack order parameters. Computer Methods in Applied Mechanics and Engineering 395, 114965.

Schöller, L., Schneider, D., Prahs, A., Nestler, B., 2023. Phase-field modeling of crack propagation based on multi-crack order parameters considering mechanical jump conditions. PAMM 22 (1), e202200039.