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DESIGN OF THERMAL PROPERTIES FOR MAXIMUM PENETRATION

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ABSTRACT

We investigate the optimal design of thermal properties in two-phase composite materials. Designs are created with the goal to make the heat fluxes and the thermal energy propagation in certain regions of the design domain as big as possible. For different examples we show worst case scenarios how badly the penetration of the boundary conditions into the material can be. We consider several loading cases of higher and higher oscillating functions on the boundary for different design domains. Decay estimates of penetration functions and the connection to approximation errors for generalized FEM are provided, see [1]. In this treatment we focus on the numerical and computational implementation of the design problems.

REFERENCES

[1] I. Babŭska, R. Lipton and M. Stuebner. “A generalization of St. Venant’s principles and application of penetration functions”. In preparation.