

Talk announcement

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Derivation and simulation of thermoelastic Kirchhoff plates

Within the research of the Cluster of Excellence PhoenixD it is of interest to simulate thermoelastic materials on thin optical components which have the structure of Kirchhoff-Plates. This leads to a bothsided nonlinear coupled 4th order system of the heat equation and the elasticity equations. The standard finite element method (FEM) is a powerful tool for the numerical solution of boundary value problems of elliptic PDEs. In this talk I will present a derivation of a 2nd order thermoelastic system on Kirchhoff-Plates following [1]. Further I will summarize some theoretical statements and show our FEM simulation results.

[1] K. Rafetseder and W. Zulehner, "A decomposition result for kirchhoff plate bending problems and a new discretization approach," SIAM Journal on Numerical Analysis, vol. 56, no. 3, pp. 1961-1986, 2018. doi: 10.1137/17M1118427. eprint: <https://doi.org/10.1137/17M1118427>. [Online]. Available: <https://doi.org/10.1137/17M1118427>.