Adaptive FEM for rotational symmetric piezoelectric problems

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A special class are threedimensional problems are such with rotational symmetry, which can be characterized by a twodimensional generating profile. For linear piezoelectric material behaviour, an extension of twodimensional FEM to rotational symmetric problems will be shown. Reminding the transversal isotropic material characteristics, the cases of axial and radial poling directions have to be considered. For the aim of adaptive mesh refinement, also the used error estimator has to be adapted. Some numerical examples demonstrate, that a sufficient accuracy can be obtained with substantial lower effort on computing time and memory requirement in comparison to true threedimensional FEM. The topic of the talk is written down as a part of [1].

References:

[1] P.Steinhorst: Anwendung adaptiver FEM für piezoelektrische und spezielle mechanische Probleme, Dissertation, TU Chemnitz 2009.

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