Contact Problems in Piezoelectricity Modeled by Hemivariational Inequalities

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Abstract: In this paper we study a class of inequality problems for frictional contact between a piezoelastic body and a foundation. The constitutive law is assumed to be eletroelastic and involves a nonlinear elasticity operator. The contact is described by Clarke subdifferential relations of nonmonotone and multivalued character in the normal and tangential directions on boundary. We derive a variational formulation which is a coupled system of a hemivariational inequality and an elliptic equation. The existence of solutions to the model is a consequence of a more general result obtained from the theory of pseudomonotone mappings. Conditions under which a solution of the system is unique are also delivered.

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