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ANALYSIS OF AN ELASTIC CONTACT PROBLEM WITH SLIP DEPENDENT COEFFICIENT OF FRICTION

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Abstract. We consider the problem of frictional contact between an elastic body and an obstacle, say a foundation. The elastic constitutive law is assumed to be nonlinear and the contact is modeled with a simplified version of Coulomb's law of dry friction. The novelty consists in the fact that the coefficient of friction depends on the slip. We present two alternative yet equivalent weak formulations of the problem and establish existence, uniqueness and continuous dependence results. The proofs are based on a new result obtained in [10] in the study of elliptic quasivariational inequalities. Moreover, we study the behavior of the solution with respect to the coefficient of friction and obtain a convergence result.

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