

Problems involving Damage

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Abstract

Many standard problems in mechanics are made more interesting by the introduction of a damage parameter satisfying either a partial differential equation or inclusion having values between 0 and 1 which models the extent to which the damage in the material affects the stress. Sometimes this parameter is applied to the entire stress and sometimes only to the elastic part of the stress. Sometimes a subgradient term is included which forces either the damage or the time derivative of the damage to lie in a certain interval. Dynamic and Quasistatic problems have been considered for problems involving adhesion and friction. There are also results available which estimate the time in which the damage parameter is larger than 0. I will give a description of some results which we have obtained and describe some interesting open problems.