Meeting: 1003, Atlanta, Georgia, SS 27A, AMS-SIAM Special Session on Analysis and Applications in Nonlinear Partial Differential Equations, I

1003-35-224 **Taras Odushkin*** (taras@utdallas.edu), 700 Custer Road, Apt. 266, Richardson, TX 75080, and **Janos Turi**. *Mathematical Description of Multilayer Relaxation and Point Defects in Solids.*

We propose a new form of a free energy of a solid body with polarization-deformation interaction taken into account. The governing equations are derived using Hamilton's variational principle. The solution of the resulting system of PDEs explains the phenomenon of multilayer relaxation near surfaces of solid bodies. In addition to that, we analytically obtained the displacement field of a point defect in isotropic media. (Received August 31, 2004)