

## LASTING DESTRUCTION OF A PILE INTO SOIL, BEING EXPOSED TO IMPACT

### Abstract

*In the problem it has been investigated the scattering (microscopic) lasting destruction process originating in an unbroken, homogeneous, isotrop, non - linear damaged hereditary - elastic pile with a finite length and a circumferential cross section, being situated into soil, in the vertical direction, as a result of being exposed to an impact on its top - end. At this time the dynamic loading in the case of a small impact velocity has been looked through and existence of rubbing forces between the side surface of the pile and soil has been taken into account ( here, it is taken into account that along the side surface of the pile it occur a stable distribution for the rubbing forces), it has been accepted the density of the pile and the bed coefficients of soil are stable, the influences of weight forces and temperature have not been taken into account. In special case the dependence of the first destruction moment of the pile upon its non - linearity parameter and the time dependence of the percentage function of destruction have been found out and analysed. Here, as general case the equilibrium equation for the pile which fulfils the conditions of the problem and its cross section is a convex and one - connected domain with any profile has been found. In the problem, for the first time, it has been taken into account, in complex form, the processes of viscosity, formation and accumulation of damages, restoration of defects, hereditary deformability of material, as the factors of lasting of destruction, changing of mechanical quality (the instantaneous Young's modulus) of material of the destructed domain, pliancy of an obstacle (soil), existence of rubbing forces between the side surface of the pile and soil, that this create the more real solution of the problem too.*