Evolution of stressed state of marble specimens during uniaxial compression test with electromagnetic field action

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Previously, the results on temporal straining dependence of the marble specimens of form of rectangular prism have been represented on "Triggering effects in geosystem" Conferences, in 2015 and 2017. The attention was focused on the rate of certain component of strain during additional action of electromagnetic (EM) field. Given presentation continues the processing and treatment of the data of those experiments. The aim is to obtain the estimates of lateral stress components arising in the directions normal to main compression, during uniaxial compression test with fixed specimens butts (no lubrication substance between specimen surface and the loading platen). The values of acting load, axial shortening and two components of lateral extension have been recorded in the experiments. The changes in specimen sizes has been transformed to strain components, but the estimates of axial strain are less confidential compared to lateral that (because of non -uniformity of axial strain along axis of main compression). The hypoelastic model has been used which involves three different components of strain and stress. Taken into account that temporal dependencies of main stress (sigma-1), lateral strain components (epsilon-2, epsilon-3) are known. The lateral stress components (sigma-2, sigma-3) and the axial strain (epsilon-1) are to be sold from the system of three equations. The values of Young modulus and Poisson coefficient have been selected on the initial phase of loading in order to minimize the deviation between empirical and indirectly calculated axial strain. The inaccuracy of epsilon-1 (deviation growth) can occur when the value of compression stress is more than 0,7 – 0,8 of fracture level. Changes in elastic moduli, as well as the limits of hypoelastic model applicability are relevant to this inaccuracy. Temporal dependencies of Lode- Nadai parameter have been built for minor range of compression stress. New results give some information about stress-strained state of the specimen material in the period of occurrence of acoustic emission responses to EM field action (few episodes only have been recorded under condition that the compression were 0,5- 0,8 of fracture level).