The problem of stability of polymer rods with account for creeping was resolved using the energy method customized by Tymoshenko and Ritz. Possible patterns of displacements were provided in the form of trigonometric series with undetermined coefficients. The principle of the minimal total potential energy of the system was taken as the basis. According to this principle, the form in which the potential energy has a minimum value is implemented in all possible patterns of deformation occurring due to the loss of stability. The energy method makes it possible to replace the solution of complex differential equations by the solution of simple linear algebraic equations. The result was obtained numerically using MatLab software applicable to different equations describing deformations and stresses caused by the exposure to creeping. The problem was solved for low and high density polyethylene. The equation of Maxwell and Thompson was employed in first case, and the equation of Maxwell and Gurevich — in the second one. The necessity of taking account of a “minor” component of elastic deformations using the Maxwell — Gurevich equation was proved.

**Key words:** rod, stability, energy, behaviour, buckling, creeping.

**References**


About the authors: Chepurnenko Anton Sergeevich — student, Rostov State University of Civil Engineering (RSUSE), 162 Sotsialisticheskaya St., Rostov-on-Don, 344022, Russian Federation; anton_chepurnenk@mail.ru; Andreev Vladimir Igorevich — Doctor of Technical Sciences, Professor, Associate Member of RAACS, Chair, Department of Strength of Materials, Moscow State University of Civil Engineering (MGSU), 26 Yaroslavskoe shosse, Moscow, 129337, Russian Federation; asv@mgsu.ru; +7 (499) 483-55-57; Yazyev Batyr Meretovich — Doctor of Technical Sciences, Professor, Chair, Department of Strength of Materials, Rostov State University of Civil Engineering (RSUCE), 162 Sotsialisticheskaya St., Rostov-on-Don, 344022, Russian Federation; 277588@rambler.ru; +7 (863) 201-91-09.