

One of the possible ways of solving general problems of constrained optimization is to convert them to a sequence of unconstrained problems. Then the need arises to solve unconstrained optimization problem reliably and efficiently. For this, Newton methods are usually applied, often in combination with sparse Cholesky decomposition. In practice, however, this approach may not be optimal in some cases and a suitable iterative algorithm may be preferred. The aim of this work is to use iterative algorithms with preconditioned Krylov subspace methods, like CGM and QMR, to solve unconstrained problems originating in the Augmented Lagrangian method applied to nonlinear and semidefinite programming (NLP-SDP). The specific implementation was carried out in PENNON software package.