

# SOR-Like Methods for Augmented Systems from Scientific Computing

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Several SOR-like algorithms are proposed for solving augmented systems which have appeared in many different applications of scientific computing, for example, constrained optimization and the finite element approximation for solving the Navier-Stokes equation. The convergence and the choice of optimal parameter for these algorithms are studied. The convergence and divergence regions for some algorithms are given, and the new algorithms are applied to solve the approximation to Stokes equations as well.