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Andrzej Ruszczynski* (rusz@business.rutgers.edu), Rutgers University, Department of Management Sci. and Inf. Sys., 100 Rockefeller Road, Piscataway, NJ 08854. *Alternating Minimization for Structured Optimization.*

We adapt the alternating linearization method for proximal decomposition to structured nonsmooth optimization problems, in which the objective function is a sum of several components, each of which is easier to optimize. The method is related to two well-known operator splitting methods, the Douglas–Rachford and the Peaceman–Rachford method, but it has descent properties with respect to the objective function. This is achieved by employing a special update test, which decides whether it is beneficial to make a Peaceman–Rachford step, any of the possible Douglas–Rachford steps, or none. The convergence mechanism of the method is related to that of bundle methods of nonsmooth optimization. We also discuss implementation for very large generalized lasso problems, with the use of specialized algorithms and sparse data structures. We present numerical results for several real-world examples, including a three-dimensional fused lasso problem, which illustrate the scalability, efficacy, and accuracy of the method. Finally we discuss extensions to nonconvex structured optimization. (Received September 14, 2014)