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There has been an increasing interest in constrained nonconvex regularized block multiconvex optimization problems. We introduce an approach that effectively exploits the multiconvex structure of the coupling term and enables complex application-dependent regularization terms to be used. The proposed Alternating Structure Adapted Proximal gradient descent algorithm enjoys simple well defined updates. Global convergence of the algorithm to a critical point is proved using the so called Kurdyka-Łojasiewicz property. Moreover, we prove that a large class of useful objective functions obeying our assumptions are subanalytic and thus satisfy the Kurdyka-Łojasiewicz property.

Two applications of the algorithm to image sequences acquired with an infrared spectro-imaging device are presented: multiplicative fringe separation and nonuniformity correction with fringe preservation. (Received September 22, 2017)