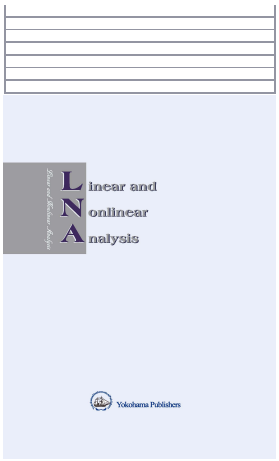


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# A semi-distance associated with symmetric cone and a new proximal distance function on second-order cone

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ABSTRACT. In this paper, we introduce a new semi-distance on a second-order cone satisfying all proximal properties in Auslender and Teboulle [1]. To our best knowledge, it may be the only proximal distance which is not induced from Bregman distance, $\varphi$-divergence, or distance-like entropy function. With this new discovery, some algorithms based on proximal distance, for example, proximal point algorithm and proximal-like algorithm can be applied accordingly to solve second-order cone optimizations.