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Goran Lesaja* (goran@georgiasouthern.edu), Department of Mathematical Sciences, Georgia Southern University, 203 Georgia Ave., Statesboro, GA 30460-8093. *Kernel-Based Interior-Point Methods for Cartesian $P_*(\kappa)$ -Linear Complementarity Problems over Symmetric Cones.*

We present an interior-point method (IPM) for Cartesian $P_*(\kappa)$ -Linear Complementarity Problems over Symmetric Cones (SCLCPs). The Cartesian $P_*(\kappa)$ -SCLCPs have been recently introduced as the generalization of the more commonly known and more widely used monotone SCLCPs. The IPM is based on the barrier functions that are defined by a large class of univariate functions called eligible kernel functions which have recently been successfully used to design new IPMs for various optimization problems. Eligible barrier (kernel) functions are used in calculating the Nesterov-Todd search directions and the default step-size which leads to very good complexity results for the method. For some specific eligible kernel functions we match the best known iteration bound for the long-step methods while for the short-step methods the best iteration bound is matched for all cases. (Received January 18, 2011)