1163-90-796 **Jane Ye*** (janeye@uvic.ca), Department of Mathematics and Statistics, University of Victoria, Victoria, BC V8W 2Y2, Canada. *Second-order optimality conditions for non-convex set-constrained optimization problems.*

In this paper we study second-order optimality conditions for non-convex set-constrained optimization problems. For a convex set-constrained optimization problem, it is well-known that second-order optimality conditions involve the support function of the second-order tangent set. In this paper we propose two approaches for establishing second-order optimality conditions for the non-convex case. In the first approach we extend the concept of the support function so that it is applicable to general non-convex set-constrained problems, whereas in the second approach we introduce the notion of the directional regular tangent cone and apply classical results of convex duality theory. Besides the second-order optimality conditions, the novelty of our approach lies in the systematic introduction and use, respectively, of directional versions of well-known concepts from variational analysis. (Received September 12, 2020)