On the directional derivative of optimal value functions of nonsmooth convex problems

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We present a formula for the directional derivative of the optimal value function of a nonsmooth and completely convex parametric problem. The formula is valid at boundary points of the domain of the optimal value function if the direction belongs to a certain conic set. We derive a functional description for this conic set and apply the formula to selected convex problems such as convex semi-infinite problems or problems involving sums and maxima of norms.

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