

# Proto-Derivatives of Partial Subgradient Mappings

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**Abstract:** Partial subgradient mappings have a key role in the sensitivity analysis of first-order conditions for optimality, and their generalized derivatives are especially important in that respect. It is known that such a mapping is proto-differentiable when it comes from a fully amenable function with compatible parameterization, which is a common case in applications; the proto-derivatives can be evaluated then through projections. Here this result is extended to a still broader class of functions than fully amenable, namely, ones obtained by composing a  $C^2$  mapping with a kind of piecewise- $C^2$  convex function under a constraint qualification.



**Keywords:** Variational analysis, subgradient mappings, proto-derivatives, second-order epi-derivatives, amenable functions, piecewise- $C^2$  functions, nonsmooth analysis

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[\[Previous Article\]](#) [\[Next Article\]](#) [\[Contents of this Number\]](#)

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