On the graphical derivative of solution maps to parameterized equilibria with conic constraints

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In this talk we present new calculations of the graphical derivative for the solution map to parameterized generalized equations/KKT systems associated with conic constraints. We first compute new second-order generalized differential constructions based on the graphical derivative of the normal cone mapping appearing in the KKT system. These computations are derived provided the feasible set appearing in the KKT system is convex. They provide verifiable conditions for isolated calmness of the corresponding solution map. Then, the application of a "dilatation" technique permitted to extend this computation to the nonconvex case. The latter requires, however, an additional condition of geometric nature imposed on the considered cone. This is related to the σ-term associated with projection onto this cone and has a local character. Under this condition our formula for the graphical derivative has the same form as the formula resulting in VI over polyehdral sets, and so, it can be viewed as its generalization to a class of nonpolyhedral cones. The main results obtained in this general conic programming setting are specified for and illustrated by the second-order cone programming.

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