

ON LOCAL CONVERGENCE OF SEQUENTIAL QUADRATICALLY-CONSTRAINED QUADRATIC-PROGRAMMING TYPE METHODS

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ABSTRACT

We consider the class of quadratically-constrained quadratic-programming methods in the framework extended from optimization to more general variational problems. Previously, in the optimization case, Anitescu (2002) showed superlinear convergence of the primal sequence under the Mangasarian-Fromovitz constraint qualification and the quadratic growth condition. Quadratic convergence of the primal-dual sequence was established by Fukushima, Luo and Tseng (2003) under the convexity assumptions, the Slater constraint qualification, and a strong second-order sufficient condition. We obtain a new local convergence result, which complements the above (it is neither stronger nor weaker): we prove primal-dual quadratic convergence under the linear independence constraint qualification, strict complementarity, and a second-order sufficiency condition. Additionally, our results apply to variational problems beyond the optimization case. Finally, we provide a necessary and sufficient condition for superlinear convergence of the primal sequence under a Dennis-Moré type condition.

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