

Constraint qualifications and strong global convergence properties of an augmented Lagrangian method on Riemannian manifolds

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In many optimization problems, Augmented Lagrangian methods are effective, inspiring theoretical and practical developments. We bring most of these recent developments from nonlinear programming to the context of optimization on Riemannian manifolds, including equality and inequality constraints. The constrained case of optimization problems on manifolds has only recently been treated. We propose to bridge this gap about recent developments in nonlinear programming. We formulate several well-known constraint qualifications from the Euclidean context that guarantee the global convergence of augmented Lagrangian methods without requiring the boundedness of the set of Lagrange multipliers. Under a weak constraint qualification, the dual sequence converges.