Projective Bundle Methods

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Workshop in honor of the 60th Birthday of Adrian Lewis
Seattle, 9–10 August, 2022

Popular approaches such as ADMM and the Progressive Hedging algorithm exploit separable structures by first solving subproblems in parallel, and then coordinating the individual information, for instance performing a simple algebraic step (a projection onto a linear subspace). While parallelism is the strength of all Douglas-Rachford-like splittings, their weakness is the adjustment of certain proximal parameter. Such difficulty can be traced back to the method of partial inverse by Spingarn.

We present a new family of methods *à la* bundle that incorporates a projective step in model-based algorithms of descent. A Bundle Progressive Hedging, derived from the general theory, illustrates the interest of the proposal.