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On level regularization with normal solutions in decomposition methods for multistage stochastic programming problems

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Résumé. We consider well-known decomposition techniques for multistage stochastic programming and a new scheme based on normal solutions for stabilizing iterates during the solution process. The given algorithms combine ideas from finite perturbation of convex programs and level bundle methods to regularize the so-called *forward step* of these decomposition methods. Numerical experiments on a hydrothermal scheduling problem indicate that our algorithms are competitive with the state-of-the-art approaches such as *multistage regularized decomposition* and *stochastic dual dynamic programming*.

Mots-clefs : Stochastic optimization; SDDP algorithm; Normal solution