Progressive Hedging for PLASMO algorithm

The Stochastic Program has to be created in a non-anticipativity-constraint formulation.

The provided example (example_twoStageSP.jl) solves the problem described in *"Scenario Analysis and the Progressive Hedging Algorithm – Simple Numerical Examples", Palsson, Ravn.*

Function to call the Progressive hedging algorithm:

status = PHsolve(graph, probS, ρ; do_slamming = 0)

Required inputs

graph: Plasmo graph with a non-anticipativity formulation.

probS: vector of probability of scenarios.

ρ: Coefficient of the quadratic penalty term. Note that the choice of this parameter influences the time of convergence and the solution quality.

Optional inputs

do_slamming (0 or 1): slamming is a heuristic that forces all the copies of the first-stage variables if the algorithm terminates for a time limit or iteration limit (algorithm not converged). Default is 0.

conv_threshold: if this input is specified it activates a heuristic that fixes a variable if constant for at least *conv_threshold* iterations. Deafult: *max_iteration +1*.

ϵ: convergence tolerance for the primal residual. Default 0.0001

ϵ_norm: average scenario convergence tolerance for the primal residual. Default 0.000000000001

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Reference

Watson, Woodruff, "Progressive hedging innovations for a class of stochastic mixed-integer resource allocation problems", Comput Manag Sci (2011)