## 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

Reference

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