HyperWorksTips + Tricks

#1274: HyperStudy – Multi-execution for Flux

Product: HyperStudy
Product Version: HyperStudy 2017.2 or above

Topic Objective
Multi-execution for Flux in HyperStudy.

Topic Details
In version 2017.2 it is also possible to use multi execution with Flux solver (2D and 3D). It allows reducing the computational time for a DOE, an optimization or stochastics by running several concurrent Flux simulations on a local machine. To benefit of this speed-up, you have just to activate Multi-execution and change if needed the number of jobs (Nb).
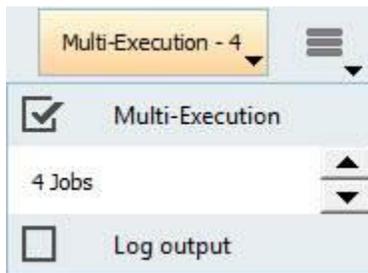
When choosing Nb for Flux multi-execution you have to be aware of the following things:

1. Nb is chosen in function of the cores available on the machine. Ex. A machine with 4 cpus (8 with hyper-threading) allows running 8 jobs max at a time;
2. Nb should be chosen in function of the RAM available on the machine and the numerical memory needed for each Flux solving. You must ensure that the total amount of numerical memory needed for all Flux jobs DOES NOT exceed the RAM of the machine.
3. Nb could vary if you launch Flux 2D or Flux 3D solver. On a same machine, you would be able to launch more Flux 2D solvers (requiring generally less numerical memory) than Flux 3D solvers.

The gain you could obtain depends of course of the number of cores allowed, but it also depends on the number of evaluations requested by HyperStudy. For instance, when you run a DOE with 32 runs over 8 cpus, 4 series of 8 runs could be run maximizing thus the gain; but when you run an optimization the number of evaluations varies through the iterations; ex. for some iterations only 2 evaluations could be requested even though 8 runs are possible.
OS: Windows and Linux
HWU requirements:

	Flux 2D	**Flux 3D** (Nb jobs from 2 to 10)
HyperStudy	25^1	$25+(Nb\ jobs-1)\ *0.9*25$

[1]Whatever the number of Flux 2D launched.