





### III. FINDINGS AND DISCUSSION

The transformation of a stochastic dynamic optimization problem into a set of deterministic equations is a major advantage of the generalized polynomial chaos over Monte Carlo simulations. All optimal trajectories modes can be found with reasonable accuracy and stability. One notices that the computational cost increased by  $P$  equations and this may increase the number of optimization iterations. Initial findings suggest that for  $P=2$ , the number of iterations is about three to four times of the original problem with no chaos, i.e. for  $P=0$ . But when an iterative solution is required, particularly for nonlinear dynamics, then the computational cost of the generalized polynomial chaos does not really add much.

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