

Highlights

- intrusive methods for uncertainty quantification have high numerical costs
- adaptivity and the One-Shot approach can be used to accelerate intrusive methods
- the proposed techniques are studied for an uncertain NACA0012 and pipe testcase with uncertainties up to order three
- using the discussed acceleration techniques allows intrusive methods to compete with collocation methods
- in our numerical experiments, intrusive methods show a faster convergence to steady state and an improved accuracy compared to collocation methods