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NON INTRUSIVE STOCHASTIC SIMULATIONS USING A GOAL ORIENTED ADAPTIVE STRATEGY.

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Abstract. The paper presents a goal-oriented strategy in the framework of stochastic non-intrusive Monte Carlo finite element simulations. The methods consists in a successive enrichment of a reduced basis. This enrichment is performed on the fly, during the Monte Carlo process. The error made by the representation on the reduced basis is assessed introducing a dual problem associated to the quantity of interest. The efficiency of the proposed approach is illustrated in numerical examples. In particular, an extension of the work developed in [1] is introduced. It consists in introducing a reduced basis for solving the dual problem in an efficient way. Different algorithms are tested for the successive enrichment of the dual reduced basis.

REFERENCES

[1] E. Florentin and P. Díez. Adaptive reduced basis strategy based on goal oriented error assessment for stochastic problems *Computer Methods in Applied Mechanics and Engineering*, Vol. 225-228, p. 116-127 (2012)