

THE hp-VIRTUAL ELEMENT METHOD FEF 2017

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ABSTRACT

In the present talk, following [1], we introduce an hp-Virtual Element Method (VEM) for the two dimensional Poisson problem in primal formulation. The VEM hp-estimates are compared to those for the hp-FEM. In particular, we discuss the convergence rate for analytic and fixed-Sobolev regularity solutions; in both cases, we show that it is possible to achieve an exponential convergence of the energy error under proper assumptions on the discrete space. Furthermore, we show that the employment of polygonal meshes allows to keep the same exponential convergence as in the Finite Element framework by means of many less degrees of freedom.

Both theoretical and numerical results are presented.

REFERENCES

- [1] L. Beirão da Veiga, A. Chernov, L. Mascotto, A. Russo: Basic principles of hp Virtual Elements on quasiuniform meshes, *Math. Models Methods Appl. Sci.*, 26:1567-1598 (2016).