

# SELF-STABILIZED VIRTUAL ELEMENT METHOD

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ABSTRACT. The Virtual Element Method (VEM) is a recent generalization of classical Finite Element Method to general polygonal and polyhedral meshes. Standard VEM discrete bilinear forms are the sum of a singular part maintaining consistency on polynomials and a stabilizing form enforcing coercivity. The stabilization term has been extensively studied, however it remains a somehow arbitrarily chosen component of VEM with several possible overall effects on the practical applicability of the method.

The aim of this talk is to present some techniques to automatically compute a stabilization term for the Virtual Element Method in simple cases. Shortcoming and benefits of this approach will be discussed.

**Keywords:** finite element method, virtual element method

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## REFERENCES

- [1] M. Cremonesi, A. Lamperti, C. Lovadina, U. Perego, A. Russo. Analysis of a self-stabilized quadrilateral virtual element for 2D linear elasticity in the Hu–Washizu formulation. To appear in *Computers & Mathematics with Applications*.

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