Divergence-free Virtual Element Method for fluid dynamics

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Abstract :

The seminar is both an introduction to the divergence-free Virtual Elements (VEMs) for the Navier-Stokes equation aiming at showing the main ideas of the method, and a brief look at some applications to the fluid dynamic problems.
In the first part of the talk we will describe the basics of the divergence-free VEMs for the Navier-Stokes equation: we present the family of virtual elements and the discrete forms. Furthermore we will explore the main features and the advantages of the "divergence-free construction".
In the second part we will present the extension of the divergence-free VEM to more applied problems among the following: the convection dominated Oseen equation, the Boussinesq equation, a fluid structure interaction problem.