



SEMINARIO DE ANÁLISIS NUMÉRICO Y MODELACIÓN MATEMÁTICA

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Título de la Charla:

***A mixed virtual element method for the Boussinesq
problem on polygonal meshes***

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Resumen

In this work we introduce and analyze a mixed virtual element method for the two-dimensional stationary Boussinesq problem. An augmented approach together with a fixed point strategy is used to analyze the well-posedness of the resulting continuous and discrete formulations. Regarding the discrete problem, we use a mixed-VEM for the scheme associated with the fluid equations in such a way that the pseudostress and the velocity are approximated on virtual element subspaces of $\mathbb{H}(\text{div})$ and \mathbf{H}^1 , respectively. The corresponding solvability analysis is performed using again appropriate fixed-point arguments. Further, Strang-type estimates are applied to derive the *a priori* error estimates for the components of the virtual element solution as well as for the fully computable projections of them and the postprocessed pressure. Finally, some numerical examples illustrating the performance of the mixed-VEM scheme and confirming these theoretical rates are presented.