SEMINARIO DE ANÁLISIS NUMÉRICO Y MODELACIÓN MATEMÁTICA

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Título de la Charla:

A Posteriori Error Estimation and Adaptivity for the Virtual Element Method

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Resumen

We present a posteriori error analyses for the Virtual Element Method applied to second order elliptic and parabolic problems. The resulting error estimators are of residual-type and apply on very general polygonal/polyhedral meshes. The estimators are fully computable as they rely only on quantities available from the Virtual Element solution, namely its degrees of freedom and element-wise polynomial projection. The error estimators are used to derive adaptive mesh refinement in a number of test problems, including reaction-diffusion systems relevant to cyclic competition models from mathematical biology. Mesh adaptation is particularly simple to implement since elements with consecutive co-planar edges/faces are allowed and, therefore, locally adapted meshes do not require any local mesh post-processing. The extreme generality of the meshes allowed opens the way to endless possibilities on how one may refine and coarsen. The design of adaptive algorithms able to exploit such flexibility is, however, a non-trivial task and something that we just started to explore. Joint work with E. H. Georgoulis, T. Pryer, O. Sutton.

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