

Gabriel Acosta

University of Buenos Aires, Argentina

gacosta@dm.uba.ar

Let $K \subset \mathbb{R}^2$ be a convex quadrilateral. In [1] the following definition can be found: K satisfies the regular decomposition property with constants $N < \infty$ and $0 < \psi < \pi$ if we can divide K into two triangles along one of its diagonals, called d_1 , in such a way that $|d_2|/|d_1| < N$ and the maximum angle of both triangles is bounded by ψ . Moreover, in [1] it is shown that the constant in the estimate of the H_1 norm of the error for the Q_1 -Lagrange interpolation can be bounded in terms of N and ψ . In [2] this result is generalized to $W^{1,p}$ for $1 \leq p < 3$, while for $3 \leq p$ it is shown that the constant can be bounded in terms of the minimal and the maximal angle of K . In this talk we show the role of the regular decomposition property in quadrilateral Q_k interpolation for $k \geq 2$.

[1] G. Acosta, R. Duran Error estimates for Q_1 -isoparametric elements satisfying a weak angle condition. SIAM J. Numer. Anal. 38, 1073-1088, 2000.

[2] G. Acosta, G. Monzon Interpolation error estimates in $W^{1,p}$ for degenerate Q_1 -isoparametric elements. Numer. Math. , 104, pp 129-150, 2006.

Joint work with Gabriel Monzón (Universidad de General Sarmiento, Argentina).