

## CONVERGENCE ANALYSIS OF THE ROTATED $Q_1$ ELEMENT ON ANISOTROPIC RECTANGULAR MESHES\*

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**Abstract.** The main aim of this paper is to study the convergence of the well-known nonconforming rotated  $Q_1$  element for the second order elliptic problems on anisotropic rectangular meshes, i.e., the meshes considered in our work do not satisfy the regular assumption. Lastly, a numerical test is carried out, which coincides with our theoretical analysis.

**Key words.** anisotropic, interpolation error, nonconforming, the rotated  $Q_1$  element

**AMS subject classifications.** 65N30, 65N15

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