ENGLISH SUMMARY

AUTOMATIC REFINEMENT OF FINITE ELEMENT SOLUTION

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This article represents various approaches for improving accuracy of the finite element approximation. An example is given by analysing displacements in thick-walled tube.

TWO- AND THREE DIMENSIONAL MODELING OF OPEN CHANNEL FLOW BY FINITE DIFFERENCE METHOD

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The "staggered grid" discretization method is applied to the calculation of open channel hydraulics. Main attention is focused in two-dimensional flow where the horizontal components of velocity vector are independent of vertical coordinate and the vertical component of velocity vector is zero. In addition to this an extension of 2D-model to a multi-layer model is considered briefly. In a multi-layer model each layer is treated like in a 2D-model. In addition there exists interchange of mass and interchange of momentum via convection and diffusion between the layers. In both models, hydro-static assumption of vertical pressure-distribution is made. The computational results of both models are compared to the velocity measurements made in a natural watercourse.