

The Analysis of The Grid Refinement Procedure for Vector Functions.

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Abstract. We consider grid adaptation based on an interpolation error estimate for the solution to a system of ordinary differential equations (ODE). Dealing with the interpolation error estimates, the adaptation to a vector solution is of particular interest. The problem involves the issue of the choice of a scalar key function for the adaptation. In our paper an effective technique is developed to analyze the standard h -refinement algorithm. This technique is implemented to study the grid refinement procedure for the vector solution to a system of ODEs. The results obtained in the paper demonstrate the impact of the key function on the results of the adaptation. We show that the key function should be consistent with a refinement criterion used in the problem.

Key words. adaptation, interpolation error estimator, grid refinement.