Grid equidistribution for reaction-diffusion problems in one dimension *

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Abstract

The numerical solution of a linear singularly-perturbed reaction-diffusion two-point boundary value problem is considered. The method used is adaptive movement of a fixed number of mesh points by equidistribution of a user-chosen monitor function. A partly heuristic argument based on truncation error analysis leads to several suitable monitor functions, but also shows that the standard arc-length monitor function is unsuitable for this problem. Numerical results are provided to bear out these theoretical statements.

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