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Title

Domain decomposition spectral method for solving two-point boundary value problems

Abstract

Spectral collocation methods are highly effective for solving differential equations. When the solution features thin boundary or interior layers, however, many collocation points may be required to resolve those layers. To address this drawback, we subdivide the domain of the equation into two or more non-overlapping domains and employ standard spectral collocation on each subdomain. The unknown function values at the interface points are determined by matching the derivatives of the computed solution from adjoining intervals.