

## Localized axial Green's function method for convection-diffusion equations in arbitrary domains

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A localized axial Green's function method for convection-diffusion equations is proposed, which is a unique and original one for general cases of partial differential equations including elliptic boundary value problems and the steady Stokes flows. The salient feature of the method is that only one-dimensional Green's functions for the axially split differential operators are used to solve the multi-dimensional problems. This localized method is drastically applied to the convection-diffusion equation which is known to be hard to solve in case where the convection is dominated. The convergence rates and interesting features of the numerical solution are investigated particularly at extremely small diffusion coefficients.

### REFERENCES

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