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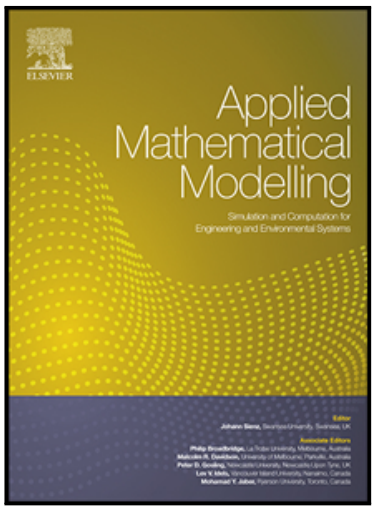

Strict upper and lower bounds of quantities in linear second-order systems

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Highlights

- A strict upper bound of the time-discretization error for linear second-order systems is obtained;
- Upper and lower bounds on quantities of interest are also obtained by dual analysis;
- The bounds on quantities of interest are further improved through an optimization procedure;
- Numerical examples show good verification of the bounds;
- The upper bound of the time-discretization error is well applicable to adaptive time-stepping.

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