

Accepted Manuscript

Finite differences on staggered grids preserving the port-Hamiltonian structure with application to an acoustic duct

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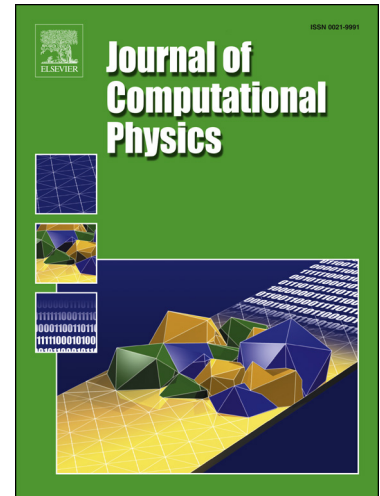
PII: S0021-9991(18)30429-7
DOI: <https://doi.org/10.1016/j.jcp.2018.06.051>
Reference: YJCPH 8100

To appear in: *Journal of Computational Physics*

Received date: 25 November 2017
Revised date: 15 June 2018
Accepted date: 18 June 2018

Please cite this article in press as: V. Trenchant et al., Finite differences on staggered grids preserving the port-Hamiltonian structure with application to an acoustic duct, *J. Comput. Phys.* (2018), <https://doi.org/10.1016/j.jcp.2018.06.051>

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Highlights

- A structure preserving spatial discretization method which preserves the port-Hamiltonian systems for open systems governed by the wave equation is presented.
- The method is extended in 2D for rectilinear and regular triangular meshes.
- Time integration is performed using implicit midpoint rule and numerical results are presented in open and closed loop in the case of boundary control.
- The advantage of the regular triangular mesh over the rectilinear one regarding isotropy is discussed.

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