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# Second-order accurate staggered schemes for fluid-structure interaction based on Dirichlet-Neumann coupling

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Despite significant progress in the last two decades or so, computational efficiency has remained a key challenge in the development of computational strategies for the simulation of industrially relevant problems involving fluid-structure interaction. Partitioned staggered solution schemes that require only one execution of solid and fluid sub-solvers in each time step represent the most efficient algorithms but often suffer from instabilities and from inaccuracy. In this work, we present second-order accurate staggered solution schemes for fluid-structure interaction that are based on Dirichlet-Neumann coupling and are unconditionally stable up to a critical amount of added mass. The properties of the schemes are analysed in the context of a model problem. Numerical tests and benchmark problems in two and three spatial dimensions are presented that demonstrate the performance of the schemes in the context of finite element discretisations of the fluid and solid subdomains.

## REFERENCES

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