

# Least-Squares Methods for the approximation of a fluid-structure interaction spectral problem

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Accurate flux approximations are of interest in many applications and this is particularly true for fluid-structure interaction problems. Considering the corresponding true spectral problem, the Least-Squares method involves the flux and the stress as independent variables approximated in a suitable  $H(\text{div})$ -conforming finite element spaces (see [2] and [1] for the Laplace and elasticity eigenvalue problem). This talk will discuss the applicability of the Least-Squares method for the determination of the corresponding elastoacoustic vibrations, and show that the resulting scheme provides a correct spectral approximation. Quasi-optimal error estimates and numerical experiments to confirm those will be provided.

## References

- [1] Least-squares formulations for eigenvalue problems associated with linear elasticity. *Computers and mathematics with applications*, 95:19–27, August 2021.
- [2] FB and Daniele Boffi. First order least-squares formulations for eigenvalue problems. *IMA Journal of Numerical Analysis*, 2021.