A compressible MHD flow interacting with thermoelastic structure

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Abstract

We consider an interaction problem between a full compressible electrically conducting fluid and a thermoelastic shell in two-dimensional framework. The shell is modeled by linear thermoelasticity equations, and encompasses a time-dependent domain which is filled with a fluid described by full compressible (non-resistive) magnetohydrodynamic equations. The magnetohydrodynamic flow and the shell are fully coupled, resulting in a fluid-structure interaction problem that involves heat exchange. The existence of weak solutions is established.

This is a joint work with Binkang Huang and Šárka Nečasová.

References

[1] K. Bhandari, B. Huang, and Š. Nečasová, *Weak solutions to a full compressible magnetohydrodynamic flow interacting with thermoelastic structure*, 2025, https://arxiv.org/abs/2505.23539.