

# Steady-State Periodic Anisotropic Stokes, Oseen, and Navier-Stokes Problems in $\mathbb{R}^n$

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First, the solution uniqueness, existence, and regularity for stationary anisotropic (linear) Stokes and generalised Oseen systems with constant viscosity coefficients in a compressible framework are analysed in a range of periodic Sobolev (Bessel-potential) spaces in  $\mathbb{R}^n$ . By the Galerkin algorithm and the Brower fixed point theorem, the linear results are employed to show existence of solution to the stationary anisotropic (non-linear) Navier-Stokes incompressible system in a periodic Sobolev space for any  $n \geq 2$ . Then the solution uniqueness and regularity results for stationary anisotropic periodic Navier-Stokes system are established for  $n \in \{2, 3, 4\}$ .

## References

- [1] Mikhailov, S.E., Stationary Anisotropic Stokes, Oseen, and Navier-Stokes Systems: Periodic Solutions in  $\mathbb{R}^n$ , *arXiv: 2207.04532*, 36p, 2022.
- [2] Mikhailov, S.E., Periodic Solutions in  $\mathbb{R}^n$  for Stationary Anisotropic Stokes and Navier-Stokes Systems. In: *Integral Methods in Science and Engineering*, C.Constanda et al.(eds.), Springer, 2022 (to appear), *arXiv:2111.04170*, 15p.