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
