geometric rigidity estimate for non-connected squares touching each other at their vertices and a tailored Poincaré type inequality for checkerboard structures.

[1] W.-P. Düll, D. Engl, C. Kreisbeck, *A variational perspective on auxetic metamaterials of checkerboard-type.* Arch. Ration. Mech. Anal., accepted 2024, arXiv:2303.16159.

[CT2] Structural stability of the Brinkman–Forchheimer equations for flow in porous media with variable porosity

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This is a joint work with Prof. Militadis Papalexandris (UCLouvain, Belgium).
In [1] Payne and Straughan established structural stability of the Brinkman–Forchheimer equations for porous media of constant porosity. The main difference with the constant-porosity case, besides the introduction of the porosity as a time-independent field variable, is that the term related to the shear viscous stresses does not reduce to a Laplacian but involves the full deviatoric deformation tensor. Further, there is an additional term due to normal viscous stresses. Herein we establish continuous dependence of solutions with respect to the physical parameters entering the equations, namely, the shear and bulk viscosities and the coefficients of the linear (Darcy) and quadratic (Forchheimer) terms for the interfacial drag. More specifically, we first prove that the shear viscous term is coercive and then establish continuous dependence in the weighted L^2-norm, with the porosity being the weight.

[1] L. E. Payne, B. Straughan *Convergence and Continuous Dependence for the Brinkman–Forchheimer Equations.* Stud. Appl. Math. **102** (1999), 419–439.