Optimization of eigenvalues of partially hinged composite plates and related theoretical issues

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We consider the spectrum of non-homogeneous partially hinged plates having structural engineering applications. A possible way to prevent instability phenomena is to optimize the frequencies of certain oscillating modes with respect to the density function of the plate ; we prove existence of optimal densities and we investigate their qualitative properties. The analysis is carried out by showing fine properties of the involved fourth order operator, such as the validity of the positivity preserving property.
Voir la preuve dans [1, 2].

[1] E. Berchio, A. Falocchi. *Maximizing the ratio of eigenvalues of non-homogeneous partially hinged plates.* Journal Spectr. Theory, **11(2)**, 2021.

[2] E. Berchio, A. Falocchi. *A positivity preserving property result for the biharmonic operator under partially hinged boundary conditions.* Ann. Mat. Pura Appl., **200(4)**, 2021.

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