Shape optimization involving Laplacian and bi-Laplacian eigenvalues

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Abstract:

In this talk we consider some shape optimization problems for eigenvalues of the Laplacian and bi-Laplacian (clamped plate and buckled plate eigenvalue problems). The solution of these problemshas been studied by using several numerical methods. We address the use of a gradient type method with the Methodof Fundamental Solutions (MFS) as forward solver. The MFS is a meshless method that allows the solution of the eigenvalue problems with high accuracy, even with small dimension matrices. This feature allows to consider also the shape optimization with 3D and 4D domains.Several examples are presented to illustrate the good performance of themethod.