# Spectral Analysis of Isogeometric Immersed Discretizations

**Carlo Garoni** [a], Carla Manni [a], Francesca Pelosi [a], Hendrik Speleers [a]

[a] Department of Mathematics, University of Rome Tor Vergata (Italy)

garoni@mat.uniroma2.it, manni@mat.uniroma2.it, pelosi@mat.uniroma2.it, speleers@mat.uniroma2.it

We consider the tensor-product B-spline isogeometric analysis discretization of a variable-coefficient symmetric elliptic problem. The isogeometric discretization is coupled with an immersed boundary (embedded domain) method that preserves the symmetry of the problem [1, 5].

We present a spectral analysis of the matrices resulting from this discretization [3]. In particular, our interest is focused on the asymptotic distribution of the eigenvalues as the mesh-fineness parameter $n$ tends to $\infty$, i.e., as the mesh is progressively refined to get increasingly accurate approximations. Such analysis plays a role both in the design of efficient solvers for the resulting linear systems and in the study of the accuracy with which of the proposed discretization method approximates the spectrum of the differential operator underlying the considered elliptic problem.

The spectral analysis tools we use are entirely based on the theory of (reduced) generalized locally Toeplitz (GLT) sequences [2, 4], which is introduced in the talk along with the obtained spectral results.

## References

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