Transversality for a Family of Bi-Laplacian Operators on Riemannian Manifolds

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December 2021

It is well known from the result by Uhlenbeck that, given a closed manifold M, the set of all C^k-Riemannian metrics on M whose Laplacian has simple spectrum is residual, for any $2 \leq k < \infty$. But what can we say about the complement of this set, besides it is meager? We show that the set of all Riemannian metrics such that the bi-Laplacian operator has eigenvalues with multiplicity greater than 2 has meager codimension 2 in the space of all $\mathcal{C}^k$-Riemannian metrics. Moreover, we show that any two metrics can be joined by an analytic curve in the space of all $\mathcal{C}^k$-Riemannian metrics such that the bi-Laplacian operator has simple or double spectrum. This is a joint work with Marcos A. Alcantra (UFAC).