The form spectrum of open manifolds

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March 7, 2022

In this talk we will consider the essential spectrum of the Laplacian on differential forms over noncompact manifolds. We will see a brief overview of known results and discuss the main differences between the function and form spectrum. One interesting problem in the area is finding sufficient and general enough conditions on the manifold so that the essential spectrum on forms is a connected set. We will see that over asymptotically flat manifolds this is the case. The proof involves the study of the structure of the manifold at infinity via Cheeger-Fukaya-Gromov theory and Cheeger-Colding theory, combined with a generalized Weyl criterion for the computation of the spectrum. Finally, we present some recent results on the form spectrum of negatively curved manifolds.