Título: Spectral Analysis Of Graph-Like Spaces

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Small-radius tubular structures have attracted considerable attention in the last few years, and are frequently used in different areas such as Mathematical Physics, Spectral Geometry and Global Analysis.

In this monograph, we analyse Laplace-like operators on thin tubular structures ("graph-like spaces"), and their natural limits on metric graphs. In particular, we explore norm resolvent convergence, convergence of the spectra and resonances.

Since the underlying spaces in the thin radius limit change, and become singular in the limit, we develop new tools such as

-norm convergence of operators acting in different Hilbert spaces,

- an extension of the concept of boundary triples to partial differential operators, and

-an abstract definition of resonances via boundary triples.

These tools are formulated in an abstract framework, independent of the original problem of graph-like spaces, so that they can be applied in many other situations where the spaces are perturbed.