**Steklov Zeta-invariants and a Compactness Theorem for Isospectral Families of Planar Domains**

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The inverse problem of recovering a smooth simply connected multisheet planar domain from its Steklov spectrum is equivalent to the problem of determination, up to a gauge transform, of a smooth positive function $a$ on the unit circle from the spectrum of the operator $a\Lambda$, where $a\Lambda$ is the Dirichlet-to-Neumann operator of the unit disk. Zeta-invariants are defined by $Z_m(a) = \mathrm{Tr}[(a\Lambda)^{2m} - (aD)^{2m}]$ for every smooth function $a$. In the case of a positive $a$, zeta-invariants are determined by the Steklov spectrum. The speaker and his collaborator obtain some estimates from below for $Z_m(a)$ in the case of a real function $a$. On using the estimate, they prove the compactness of a Steklov isospectral family of planar domains in the $C^\infty$-topology. They also describe all real functions a satisfying $Z_m(a) = 0$. The talk is based on a joint work with Alexandre Jollivet.