Spectral Properties of one Elliptic Operator in a Punctured Domain

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Abstract: In the work we derive regularized trace formulas which were established in papers of Kanguzhin and Tokmagambetov for the Laplace and m-Laplace operators in a punctured domain with the fixed iterating order $m \in \mathbb{N}$. By using techniques of Sadovnichii and Lyubishkin, the authors in that papers described regularized trace formulae in the spatial dimension $d = 2$. In this note one claims that the formulas are also true for more general operators in the higher spatial dimensions, namely, $2 \leq d \leq 2m$. Also, we give the further discussions on a development of the analysis associated with the operators in punctured domains. This can be done by using so called 'nonharmonic' analysis.

Keywords: Regularized trace formula, m-Laplace operator, punctured domain, non–harmonic analysis

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