On the number of eigenvalues of correct restrictions and extensions for the Laplace operator

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Abstract: At the beginning of the last century J. Hadamard constructed the well-known example illustrating the incorrectness of the Cauchy problem for elliptic-type equations. If the Cauchy problem for some differential equations is correct, then it is usually a Volterra problem, that is, the inverse operator is a Volterra operator. For such differential equations there exists a set of Volterra correct problems besides the Cauchy problem. Until recently, not a single Volterra correct restriction or extension for elliptic-type equations was known.

Biyarov (see [1]) has recently proved that there are no Volterra correct restrictions and Volterra correct extensions for the Laplace operator in the two-dimensional case, it has also proved that there are no Volterra correct restrictions and extensions for a wide class of correct restrictions and extensions for the Laplace operator in the n-dimensional case.

In the present paper, we prove the theorem that the correct restrictions and extensions for the Laplace operator with discrete spectrum always have an infinite countable number of eigenvalues in the two-dimensional case.

Keywords: Laplace operator, maximal (minimal) operator, Volterra operator, correct restrictions, correct extensions, discrete spectrum, number of eigenvalues

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References

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