

The existence of eigenvalues for operators acting in $L^2(\mathbb{R}^n)$

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Abstract

© 2017, Allerton Press, Inc. We present conditions that allow us to prove the existence of eigenvalues and characteristic values for operator $F(D) - C(\lambda): L^2(\mathbb{R}^m) \rightarrow L^2(\mathbb{R}^m)$, where $F(D)$ is a pseudo-differential operator with a symbol $F(i\xi)$ and $C(\lambda): L^2(\mathbb{R}^m) \rightarrow L^2(\mathbb{R}^m)$ is a linear continuous operator.

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Keywords

characteristic value, eigenvalue, pseudo-differential operator

References

- [1] Moikeichev, V. S. "Problem of Eigenvalues in the Whole Space for Equations With Discontinuous Coefficients", Russian Mathematics 46, No. 6, 43-47 (2002).
- [2] Moikeichev V. S. "Absence of Eigenvalues in the Case of a Generalized Wave Conductor Problem", Russian Mathematics 48, No. 6, 39-44 (2004) [in Russian].
- [3] Naimark, M. A. Linear Differential Operators (Nauka, Moscow, 1969) [in Russian].
- [4] Moikeichev, V. S. "Eigenvalues of Pseudo-Differential Operators", in Modern Methods of the Theory of Boundary Value Problems: Materials of the Voronezh Spring Mathematical School "Pontryagin's Readings-XXIV", Voronezh State University (Voronezh, 2013), P. 129 [in Russian].
- [5] Shubin, M. A. Pseudo-Differential Operators and Spectral Theory (Nauka, Moscow, 1978) [in Russian].
- [6] Moikeichev, V. S. "Existence and Basisness of Eigen and Adjoined Elements of Linear Operators", Russian Mathematics 52, No. 6, 37-48 (2008).